LXF107 LXF July 2008 Issue 107

On the DVD Ubuntu 8.04: special Linux Format edition!

LINUX FORMAT

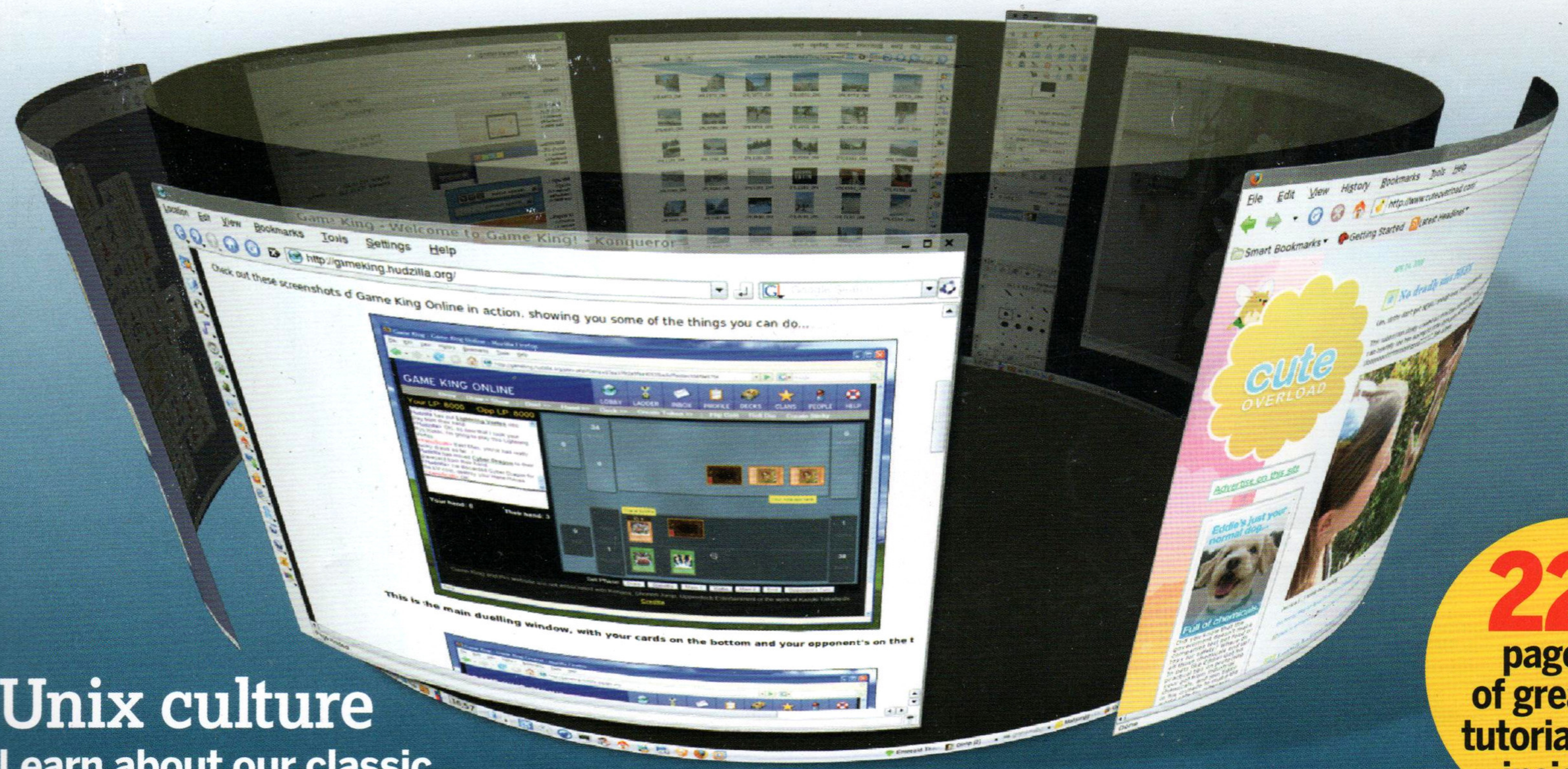
The #1 source for Linux

PLUS: Mandriva One 2008 Spring
User-friendly live distro
Compiz » Atomic Tanks » Inkscape » and more!

Sysadmins ahoy!
All-new magazine section for you BOFHs p62

Desktop revolution!

All the coolest tips and tricks to streamline your desktop



22 pages of great tutorials inside

Unix culture
Learn about our classic computing heritage p52

20 killer apps
We reveal the best apps you've never heard of p56

Pimp your Eee
How to get more from the little PC that could p84

Kernel know-how
Understand how it works and feel 10% smarter p98

"I suddenly realised there was this real need for free Flash technology."

From a bar in Brussels Rob Savoye talks Gnash p48

www.linuxf

The perfect desktop » 20 indispensible apps » Hacker culture » Ubuntu 8.04 » Roundup: note-takers » Pimp your Eee » Gordon's alive!

Printed in the UK

ukfast®
best hosting provider

Experience

Solid Linux Clustering

Dedicated to providing outstanding **performance**, Linux clustering from UKFast means you have no single point of failure.

Furthermore, since we know **reliability** is vital to your company, plug into our Business Continuity Platform and guarantee your uptime is frozen at 100%.

And on top of this, the UKFast team presents unparalleled customer **care**. Linux experts are waiting to take your call and they'll answer within three rings.

Performance. Reliability. Care.

The UKFast experience.

Free laptop **when you purchase a UKFast Clustered Solution**

See website for details

Call today

0800 458 4545

www.ukfast.net/lft

*No penguins were harmed in the making of this ad.

The ISPAs
05/06/07/08 WINNER
Best Hosting Provider

redhat
Authorised Hosting Partner

LINUX FORMAT
The #1 source for Linux

What we do

» We support the open source community by providing a resource of information, and a forum for debate.

» We help all readers get more from Linux with our tutorial section – we've something for everyone!

» We license all the source code we print in our tutorials section under the GNU GPLv3.

» We give you the most accurate, unbiased and up-to-date information on all things Linux.

Who we are

Our big feature this issue focuses on customising your GUI. We asked Team LXF: "What tweaks have you made to make your desktop more efficient?"

Graham Morrison
"Go-faster stripes on my wallpaper and a giant spoiler above the taskbar. Classy."

Mike Saunders
"I reprogrammed one of those RSI-stopping utilities – it interrupts my daydreaming and tells me to do some actual work."

Neil Bothwick
"Tweaks? Recompiling *X*, Gnome, KDE and *Bash* with every option in the *GCC* man page works best for me. Only two crashes per hour!"

Efrain Hernandez-Mendoza
"A maracas startup sound and plain white wallpaper to combat Seasonal Adjustive Disorder. *Júbilo*!"

Andrew Gregory
"Upgrade your pickup, get a custom pickguard and you'll be rocking. Er, hang on a sec, which magazine is this again?"

Andy Channelle
"I get sick of hitting Alt+Tab to switch between windows. So I simply bought six 22" LCD monitors. Sorted."

David Cartwright
"It's all about buzzwords. Synergise and leverage your GUI's potential by strategising core competencies. Or just run *IceWM*."

Michael J Hammel
"As a graphics artist, I like to keep some spare pixels around in case my monitor conks out."

John Brandon
"Isn't XML and Web 2.0 supposedly the answer to everything? I'll get cracking on some sort of social networking window manager."

Chris Brown
"A few weeks ago I replaced my trusty old ball mouse with a shiny optical one. What do you mean, it's 2008?"

Nick Veitch
"Never accept Mike's offer to speed up your PC. Three weeks later and I'm still fixing **Xorg.conf** in *Vim*. One day, Saunders, one day."

Andy Hudson
"I ran my distribution's install discs through a wind tunnel, and now my desktop screams along with no drag!"

Have Linux your way

» In terms of raw clock speed, my desktop PC is 367 times more powerful than my old Amiga – and that's only in one of its four cores. It also has four gigs of RAM and 1.5 terabytes of storage, which is enough for even Graham's gargantuan MP3 collection. And yet clearly I'm not 367x more productive – if I were, I would have finished all my programming projects, walked on the moon, and might even be able to take the bin out without being nagged by my wife.

Computers are supposed to make us more productive, and yet most of the time we see little of that boost. Well, this issue we want to help you claim at least a little of that bonus productivity. Your desktop – whether you're a home user who wants to surf the web or a senior sysadmin managing thousands of computers – is the key to maximum productivity, whether you realise it or not.

And I'm not just talking about virtual desktops or *Compiz*, although those play a part. Thanks to Linux's choice-driven mentality, you can get an OS X-like dock for your favourite apps, you can install widgets that keep information close to hand, and, yes, you can turn everything into a huge spinning cube that makes half your friends' jaws drop and the other half say "what's the point?" – but that's just jealousy talking, in my opinion!

Of course, your desktop is the thing you work with day in, day out, and even if you don't fancy making it more productive, then you should at least care about making it look good – and again, that's where Linux excels. But enough from me: turn over to p40 to dive in and start customising!

Paul Hudson Editor
» paul.hudson@futurenet.co.uk

Paul

LINUX FORMAT

Contents

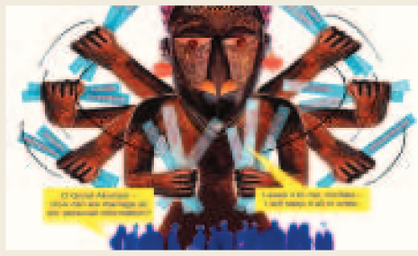
Everything that's inside this packed issue of the world's finest Linux publication: enjoy!

Reviews

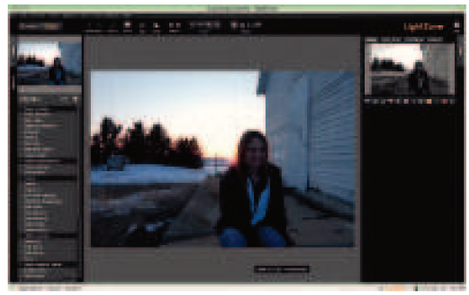
› **Finally: something smarter and easier to use than *MythTV*.**

› **Our powers combine into moodly Python cheats, or something similar.**

What on Earth is...
Akonadi
KDE, PIM and other TLAs; what does it all mean? p60



20 indispensible applications p56



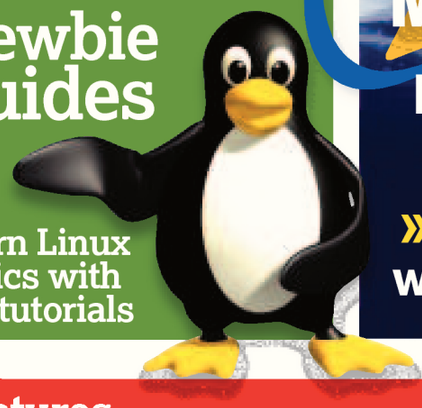
Talking heads

"There was much wailing and gnashing of teeth over on Slashdot that a jewel had been lost."

New columnist David Neary on MySQL p6

Newbie guides

Learn Linux basics with our tutorials



Mandriva One 2008 Spring

Linux for everyone: a complete, easy to use distribution

» User-friendly installer » Office and web software » Powerful admin tools

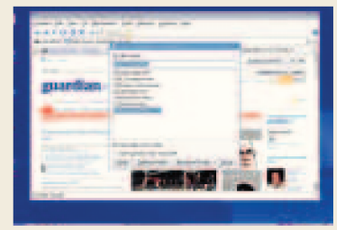
Features

Regulars at a glance

› **Our subscriptions team waits eagerly to take your order.**

Tutorials

Beginners

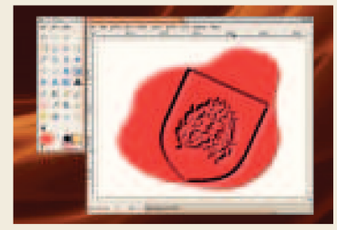


› **LXF First Steps tutorials: now with 10% more screenshots free!**

Laptop love

Gimp

Vector graphics



› ***Gimp*'s wax seals are as good as the real thing, just less messy.**

Hardcore Linux

ADOPTION

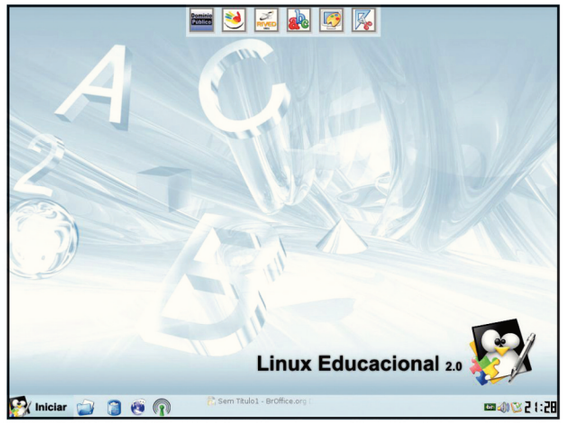
Record migration in Brazil

52 million school kids sit down to KDE desktops

Brazil's government has begun a migration programme that will eventually see all of the country's children doing their school work on Linux PCs. As a result KDE will become the desktop environment for 52 million school-age children. The project dwarfs every other public sector free software deployment in the history of computing and will include a phased rollout of over 53,000 individual computer labs with approximately 825,000 installations to serve the needs of the country's growing population. By some estimates (which variously put the number of Linux users between 20 and 48 million), this one initiative would more than double the userbase for the operating system and would inevitably have a huge impact on post-education deployments.

The project is being managed by the Ministry of Education and will be based around a desktop sharing system that gives between two and five users access to a single machine. The system itself will be a tailored edition of Debian, called Linux Educacional 2.0, containing a selection of education software and an adapted version of KDE 3.5. In cities, the computer labs are being built around a server with seven CPUs which in turn powers 15 desktops. In rural areas, the system allows five users to work on a single CPU box which reduces both costs and power needs.

Brazil is also entering the second phase of its plan to provide each student with a (Linux-powered) computer of their own, and this will involve rolling out over 150,000 machines in the coming years.



› Linux Educacional 2.0 has been refined based on feedback from pupils testing the first version.

Aaron Seigo, who works on KDE for Trolltech, told *Linux Format* the adoption programme was remarkable for a number of reasons, not least the non-involvement of the broader KDE community. "The main KDE project had very little involvement with this, and that's a terrific thing. It means that not only was KDE selected on its merits, but it also proves quite clearly that large-scale deployments can be done independently," he said.

There are, however, several people who are involved in both KDE and the Brazilian project and this, Seigo said would lead to marked improvements in both. "Such deployments often look to tap existing knowledge, and the KDE team itself is an obvious place to start looking, but these deployment teams often end up creating new KDE team members who start contributing upstream either due to the needs of the project or simply because they see the value in doing so."

Organic growth

"With each deployment the KDE team itself grows," Seigo said. "The costs to the existing KDE team are nearly zero and the growth comes in direct response to need, so there is no speculation – and therefore risk – associated with this kind of growth."

› Fórum Internacional Software Livre is one of the biggest free software conferences in Brazil. Picture: Cesar Cardoso.

Brazil and free software

Brazil is gaining a reputation among the BRIC economies (Brazil, India, China) as a testbed for software deployments. Last year the country adopted open source software on all its public internet access terminals and encouraged public sector institutions to favour Linux and open source software over proprietary alternatives.

Some of the reasoning behind this trend is political – Brazil is led by leftwing President Lula da Silva – but there are also sound economic reasons. A recent small study by developer Gustavo Duart showed that licencing for Microsoft software was twice as expensive in Brazil as in the US in absolute terms. However, when looked at in proportion to the country's national income, licences for business cost 19 times more and home users can expect to pay 15 times the price. For business, that's a massive 20.1 per cent of gross national income, and just under eight per cent for home users. He said: "If there's any hope of widespread computer access, then surely we can't expect people to spend 7.8% of their annual income on Microsoft software licenses alone. The burden on small businesses is also prohibitive."

ENVIRONMENT

Virtualisation to save the world

VMware puts green cards on the table.

Virtualisation will be one of the key areas where enterprises can reduce their carbon footprints, new research claims. The report, prepared by VMware, says that enterprises can save money and carbon dioxide emissions by using virtualisation technologies from the desktop to the data centre. Consolidating 10 users on to a single machine, for example, can reduce power consumption by 80–90%.

VMware's research says that for every virtualised server, a company can save 7,000 kilowatt hours (kWh) of power, which equates to four tons of CO_2. on these figures, the company claims that its current installed base of six million virtualised servers has saved approximately 39 billion kWh of energy since 1998, or roughly 4.4 billion US dollars.

Stephen Herrod, VMware's chief technology officer, said that most desktops still consumed 70–80 per cent of normal power when left in an idle state. "We can deliver substantial power and cost savings through innovative power management capabilities in our virtualisation solutions that safely power down or throttle servers when not in use," he said. "By powering down servers and desktops during inactive periods such as evenings or weekends, we can help customers save another 25 per cent or more on power consumption without affecting applications or users."

Beyond the power saving abilities, virtualisation can also allow organisation to scale capacity without putting a strain on their power supply. Sheffield Hallam University recently upgraded its data centre capabilities to cater to its 33,000 staff and students but found, on projections, that the power grid would not be able to supply enough juice to power the upgraded server farm, and space was also an issue. By opting for virtualisation, the institution was able to increase capacity while cutting its carbon footprint by 269 tons and save £43,000 each year on power bills.

› Sheffield Hallam University has cut its impact on the environment by virtualising its data centre. Picture: Alastair Burt.

Dave Thornley, the university's service support manager, said that with space and power at a premium, it was important to look at all the options available. "We decided that moving to a virtual infrastructure would be the most effective way to tackle cost management and space issues," he said. "We have made a huge impact on our power bills as well as leading to major savings in the deployment of new services to users."

GAMES

Oh, the humanity!

Linux users get a taste of first-person horror.

Frictional Games has announced Mac and Linux demos of its latest horror masterpiece *Penumbra: Black Plague*. The independent Swedish developer says the full version of the game is imminent.

The game itself is a sequel to *Penumbra: Overture* and dumps the player in the middle of a hellish world populated by beasts that look like they've come straight from the fevered brain of HP Lovecraft. Development lead Thomas Grip said *Black Plague* picked up where the previous version left off and would, he hoped satisfy those who felt the last game ended abruptly. "We really thought that the last game ended in a rather lame fashion and we wanted the series to go out with a bang," he said.

To that end, the game would feature some impressive explosions and a ton of blood and guts. "Everyone loves explosions and we feel that we need to cash in on that too," Grip added.

The game is available for players over 16 from **www.penumbrablackplague.com** priced $19.99.

› Frictional's HPL game engine is named after the author of the Cthulhu Mythos and *Reanimator*. Expect gore.

Comment

Storm in a teacup

David Neary

There's an expression that comes to mind when I think about the litres of virtual ink which were used over the recent announcement by Marten Mickos that MySQL was considering shipping some proprietarytools for enterprise-type applications as well as the existing free-as-in-speech *MySQL* server.

Specifically, what Mr Mickos announced was that a new online backup module, which will be available with the *MySQL 6* release later this year, would come with some additional plugins available only to paying *MySQL Enterprise* customers, and not in the GPL version.

There was much wailing and gnashing of teeth over on Slashdot that a jewel in the free software crown had been lost. And yet, if we look around, this is not without precedent. Trolltech has been releasing separate GPL and commercial versions of *Qt* for years, with nary a complaint. The tradition of releasing a fully featured version of *Evolution* under the GPL, but having some commercial add-ons, was a foundation of the Ximian business model back in 2000 and 2001. It's still at the heart of Fluendo's business model around *GStreamer*.

MySQL itself has always been honest about its choice of the GPL – that licence was chosen so that pretty much anyone who includes *MySQL* support in non-free software they ship will need licences. The *libmysql-lgpl* project came about to get around that.

My opinion is simple: copyright holders get to decide what they do with their products. In the end, I don't think that MySQL will go through with it, but if they do, I'd be happy to keep on using the GPL version. If you're not happy with what a copyright holder is doing, then you are completely free to fork the project. That's the great thing about free software.

› David Neary is a long-time Free Software advocate, having worked with Gnome, Gimp and OpenWengo.

DEVELOPMENT

More work needed on drivers

Vendors will encourage hardware designers to go open source.

Representatives from hardware vendors including Hewlett Packard, Dell, Asustek and Lenovo promised to re-draft procurement contracts to "strongly encourage" chipset builders to create open source drivers for their wares. VIA Technology, which makes low-power CPU and motherboards, promised to open up its drivers and do more to support community developmens.

The pledges were made at the latest Linux Foundation conference held in Texas. Jim Zemlin, executive director at The Linux Foundation, said the regular conferences were becoming an important part of the development effort as the organisation had the profile to draw in leaders and key stakeholders from both the community and commerce side of Linux. "This year we saw breakthroughs in driver support for the desktop, IPv6 compliance and virtualisation," he said. "We feel it's an important venue for solving cross-industry and cross-community issues."

In addition to promises from hardware vendors, the conference also saw the establishment of working groups dedicated to IPv6 (the next version of the internet connection protocol), driver backporting to ensure older distributions had access to new drivers and, for the first time, representatives of all the mobile Linux developers. Despite disagreeing on a few fundamentals, the mobile operators did agree to study the potential of the Foundation's Linux Standards Base project.

A virtualisation mini-summit drew contributions from Xen, KVM, lguest, VMware and Qemu and resulted in agreements to collaborate on interfaces and patches for virtualised machines.

› *Qemu* is likely to see some interface improvements following the Linux Foundation conference in Texas.

LEGAL

SCO gets its day in court

Ex-Linux distro vendor up before the beak.

After years of litigation, SCO's CEO finally got to make a case for his company in court. However, the circumstances of Darl McBride's appearance before the judge is probably not quite what he expected. Following Judge Dale Kimball's evisceration of SCO's claims of Unix ownership last year, the first opportunity to hear McBride in court came during a case set to decide how much SCO owes Novell for selling Unix licences.

McBride began his testimony by restating that there was plenty of evidence that Linux contained codes directly lifted from SCO's UnixWare product line. This contradicted the earlier testimony of SCO VP Chris Sontag who said he'd not seen any analysis to support the claim.

› SCO CEO Darl McBride has continually claimed that Linux contained stolen code. The judge didn't agree.

To support his claims, McBride said: "When you go to the bookstore and look in the Unix section, there's books on 'How to Program Unix' but when you go to the Linux section and look for 'How to Program Linux' you're not going to find it, because it doesn't exist." He added that Linux was a copy of Unix and there was no difference between the two systems. Hmm...

Secure Hosting

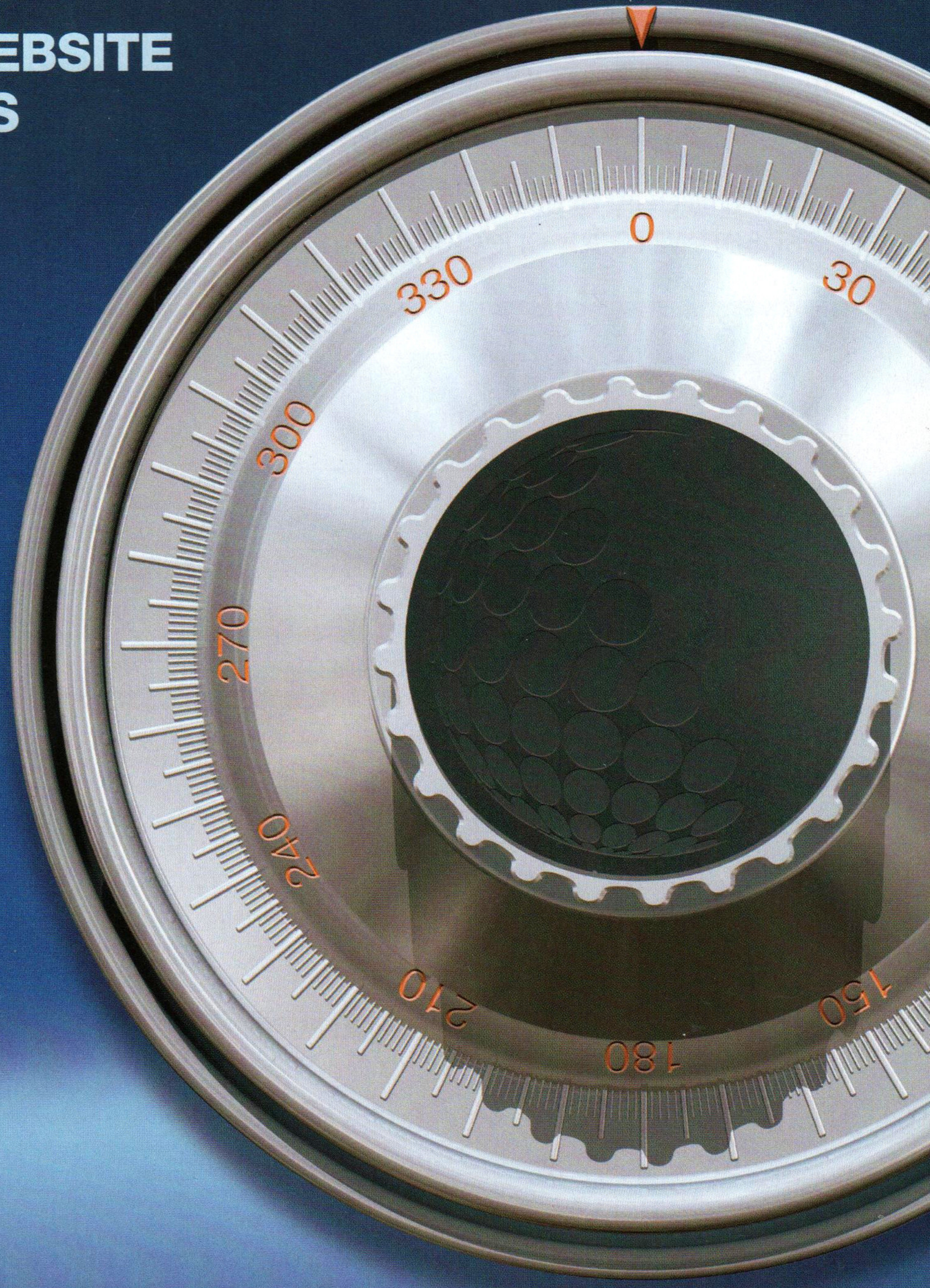
AWARD WINNING WEBSITE HOSTING PACKAGES

Reliable Load-balanced Hosting Packages

Choice of Windows or Linux Hosting

Secure SSL Web Space as Standard

For a full features list visit
http://www.names.co.uk/hosting



Reasons to Choose Namesco

- Award Winning Hosting
- Fast UK Based Support
- FREE Domain Included

BEST SHARED HOSTING WINNER theISPAs 2008 www.theispas.org.uk

" I've tried a few hosting providers and Namesco is head-and-shoulders above the rest quite literally "A world apart". Your service is fast, reliable and easy-to-use. "

Paul Ely, Digital Generation.

www.names.co.uk

0845 363 8888

Namesco® A DADA COMPANY

- Domain Management
- Broadband & SDSL
- Email Services
- Business Hosting
- Servers & VPS

Comment

The future of distros?

Michael Meeks

This month I spent time researching new things – which meant abandoning SLED 10, and heading to the other extreme: installing 'Factory' (SUSE's bleeding edge distribution). Happily the Alpha version I started with worked fairly nicely and as you read this we'll be well into our beta cycle.

I'm still extraordinarily happy with the new package management solution: *Zypper*. With a new from-scratch solver re-write it's simply amazingly fast; from refreshing your repositories to installing a package in seconds. The new 'distro update' feature rivals *APT*'s functionality – it's an incredible improvement.

It's also great to see the sheer amount of polish going into Factory daily: making the latest software work together out of the box. Creating a sweet, up-to-date distro is a delicate balance of version selection and intense bugfixing. It was interesting to see Mark Shuttleworth's comments on the latest Ubuntu release (Hardy Heron). He highlighted the difficulties of re-using work from Red Hat and Novell on top of the Ubuntu's different underlying package versions. Of course, if we all shared a release schedule, a package format, an installation system and so on, it would become trivial to create, release and support any new Linux distro. Having said that, it's hard to see how the complexity of versions and timing would disappear. The current diversity of answers to hitting the sweet spot of timing, package versions, integration and bug-freeness is refreshingly challenging, and yields cross-distro differentiation far deeper than just artwork.

Finally, it's encouraging to send KDE & Gnome hackers to Spain this week to give a joint talk at Guademy; I hope we can continue to deepen cross-desktop collaboration with a joint KDE/Gnome conference in the summer of 2009.

› Michael is a pseudo-engineer, semi-colon lover, Novell *OpenOffice.org* hacker and amateur pundit.

DEVELOPMENT

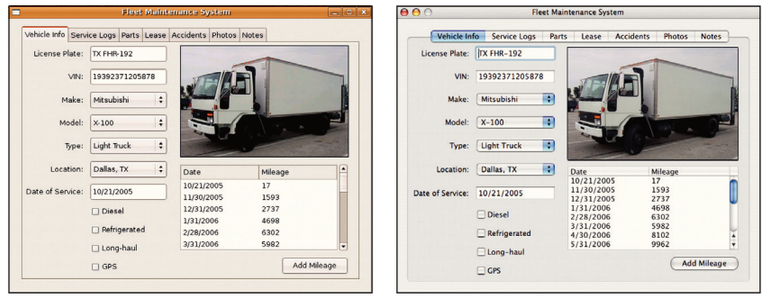
RealBASIC 2008 release 2

Cross-platform development gets a little more refined.

Real Software has released a new edition of its RealBASIC 2008 package, which provides a range of cross-platform development tools. The software, which is now available for Windows, Linux and OS X, allows coders to write one application and then run it across all three supported platforms.

Geoff Perlman, President and CEO, said the company had committed to continual improvements and, crucially, feature parity across the versions. "With over 200 fixes in this release and the addition of a new class called Pairs, we are providing a more productive and reliable tool set to our users," he said. The Pairs class allows users to define key/value pairs and linked lists, and refinements to the introspection system introduced in RealBASIC 2008 release 1 allows a programme to acquire information about itself, such as in an object-oriented system with classes. Introspection is vital, the company said, in allowing developers to work efficiently with databases.

The package is available in Deb and RPM varieties (the former optimised for Ubuntu) and as a static binary, and the Personal Version is free for Linux users, while Windows and Mac users will have to pay $100 to get their hands on this nifty cross-platform development tool.



› **RealBASIC allows genuine cross-platform application development and deployment.**

Embedded Linux news

› **Following the acquisition of Trolltech by Nokia**, support for *Qt* on the company's Internet Tablet devices has been announced. The N800 and N810 machines will continue to be based on the *GTK*-friendly Maemo platform but will, in the next OS release, include *Qt* libraries so native *Qt* applications will run on them. Moreover, Nokia has pledged support to the port of Ubuntu to the ARM platform, which means users will soon be able to access a complete Ubuntu system on the tablets.

› **A new survey has found that 18% of embedded developers** were working on Linux systems, making it the most popular embedded OS. The report by Venture Development Corporation (VDC) discovered that the main reason for the popularity of Linux, and other open source operating systems, was cost, followed by flexibility of source code access, familiarity with the system and maturity of available development tools.

› **TuneWiki has unveiled an iPhone style media player interface** for the Android mobile platform. The software is currently only available via emulation, but connects to the TuneWiki service to acquire album art and lyrics when the user begins playing a track. It was originally developed as an application for 'jailbroken' iPhones – those that have been altered to run unauthorised applications.

ENTERPRISE

The benefits of multiplicity

Kenyan start up bring multiuser desktops to Africa.

While efforts like the ClassMatePC, EeePC and OLPC are attempting to bring cost-effective Linux hardware to the world's school children, a separate strand of low-cost computers are targeting business users. Often these take an overpowered PC system and then trail a number of users from the same device, giving each a personal desktop and access to the applications they need to work.

Patrick Mathenge, the CEO of a small hardware vendor in Mombasa, Kenya, said he's seen a lot of interest in multiuser systems as businesses in the country realise the benefits of the system. His company, Mullard Electronics, is distributing a software and hardware combination developed in Canada that allows 10 users to work on a single 3.0GHz dual-core PC. Each user has their own screen, mouse and keyboard, and the Linux software takes care of everything else. Mathenge told African technology website Balancing Act News that Linux was what made the system possible both in terms of cost and maintenance. "By using the software [businesses] will be able to save up to 50 per cent of the money that you would use to buy individual client machines. There is only one internet connection, reduced power backup requirement, created work space and reduced heat generation," he said.

Desktop Multiplier is already having an impact in South Africa. Picture: Userful.com

In addition to targeting business users, Mathenge said the government had bought 100 of the packages for installation in its Digital Village sites, which provide internet access across the country, and has partnered with youth organisations to meet the training needs that access to technology will bring. He said the hardware and software were the easy part of the equation, but the government needed to concentrate on building an ICT syllabus that would prepare students for work now and in the future.

The solution offered by Mullard Electronics is based on the Desktop Multiplier package created by NetSys in Canada.

Newsbytes

Bill Gates has revealed in an interview that he still doesn't like open source software. In an apparent attempt to steal Richard Stallman's thunder (and completely appropriate the word free), Gates said Microsoft agreed with free software when giving away Microsoft applications in developing countries, but that the GPL, which Stallman would call the very mark of free software, meant that no one could ever improve software released under the licence.

On that note, the KDE development team has released a new and improved edition of its desktop environment. The alpha release of KDE 4.1 adds a number of significant features including the ability to use OS X desktop widgets via the Plasma desktop. In a statement, the organisation said: "This alpha release marks the start of the 4.1 feature freeze, so virtually all of the remaining developer effort between now and the official 4.1 release in July will focus on bugfixing, polish, and stability." Two important parts of the new release are feature-parity with the previous KDE 3.5.x desktop and the adoption of *Qt 4.4*.

Groklaw and *OpenMoko* developer Harald Welte won this year's Free Software Foundation awards for contributions to free software. Groklaw, which was established to counter the claims of SCO in its battle against IBM was praised for proving an "invaluable source of legal and technical information for software developers, lawyers, law professors, and historians" while Welte was awarded for his work on the **gpl-violations.org** website which identifies and prosecutes violations of the GNU GPL. The website has been involved in over 100 cases since it was launched in 2004.

Comment

Old-school efficiency

David Cartwright

With tedious regularity I come across systems that have been written with scant (or no) thought of how efficient the algorithm is, or the best way to index the database tables, or whatever.

You know the kind of thing. Someone phones and says: "Our system's going really slowly; can you come and have a look?". So you log in and spend 20 minutes running the database query analyser, only to find that every search of the catalogue is doing a full table scan on some 300,000-line table because nobody ever created any indexes. Or that after three years with no problems, they just happened to hit a boundary case that caused the underlying algorithm to become intractable and take half an hour to return an answer.

The problem is that we're spoilt for CPU power, memory, disk space and I/O speed. Fewer and fewer people in our walk of life remember multi-user systems where you had (say) a single 680x0 processor, with a couple of megs of RAM, shared between 32 users; in those days you really had to care about the efficiency of what you wrote, or it simply wouldn't fly. Nowadays the technology bails you out until the datasets get to a certain size, and only then do things start to perform like a dog; trouble is, this tends to happen after the guy who wrote it has moved on to a new contract or job.

I should be applauding such diabolical designs – after all, I make a fair lump of my living doing performance analysis and re-engineering dodgy code. But I do find myself wishing that every so often I'd find something that's been designed by a person who learned computing on a ZX81 or a BBC Micro, and who's therefore used to giving at least a passing thought to resource usage and algorithm efficiency.

› David is an IT consultant with a penchant for cross-platform integration, CTI and proper beer.

Newsbytes

Adobe has removed many of the restrictions and licence fees previously applied to its Flash technology. In a bid to counter the attack from Microsoft's Silverlight (which is set to receive an Olympic-sized boost during the Beijing games), the company says it will no longer charge developers a licence fee if they build a *Flash Player* clone and will allow its own player to be integrated into any other application or device. The company said that, as part of its Open Screen Project, it will also publish details of Flash protocols so users can create their own media servers, for example, and will also open up its porting APIs. Such as move is significant in the race to build up users for the AIR initiative which may form the basis of Adobe's entire software strategy in the medium-term.

Adobe's new openness may be beneficial to the *Gnash* project, which is attempting to create an open source version of the *Flash Player* plugin. The project recently released version 0.8.2 of the software which contains a complete implementation of Flash 7's features and many of those from later versions. The software is increasingly being included as an optional install in distributions such as Ubuntu and Yellow Dog Linux.

Gael Duval's Ulteo has release a new piece of software that claims to offer seamless backups and synchronisation of data across computers and the company's Ulteo desktop project. Ulteo allows users to run common software such as *OpenOffice.org* from within their browsers.

› Ulteo is apparently nearly ready.

Microsoft has launched what may be the sequel to its Windows operating system business. MS Live Mesh is an attempt to marry up all of its Live services to a single cross-platform, er, platform.

The *Firefox* team has taken another step towards the launch of *Firefox* 3 by taking the browser into the release candidate phase. The Mozilla Foundation is fostering a lot of 'labs' projects to make the browser more attractive including *Prism* and Weave. The latter is a remote service for maintaining a user's browser profile (history, bookmarks) so their online personality is never more than a couple of clicks away. LXF

Coming Events

› Red Hat Summit

18–20 June, 2008, Boston, USA

Red Hat is likely to be bouyant during this annual summit thanks to strong growth over the previous year and the apparently successful integration of JBoss into the company. Reflecting this, there are a number of middleware-focused workshops being held throughout the three days, as well as keynote addresses from new CEO Jim Whitehurst and, unusually, Joel Cohen, one of the writers of *The Simpsons*.

www.redhat.com/summit

› USENIX Annual Technical Conference

22–27 June, 2008, Boston, USA

If you're in Boston for Red Hat, you might as well hang around and pick up some tips from one of the largest technical conference in the US. The conference begins with a three day training strand with sessions on Botnet defence by Bruce Potter and High Availability Linux deployments by Alan Robertson. And in addition to a keynote address on the science of origami by Robert Lang, Matthew Melis of the NASA Glenn Research Center will be discussing space flight in the aftermath of the Columbia accident.

www.usenix.org/usenix08/lp

› Libre Software Meeting

1–5 July, 2008 Mont de Marsan, Aquitaine, France

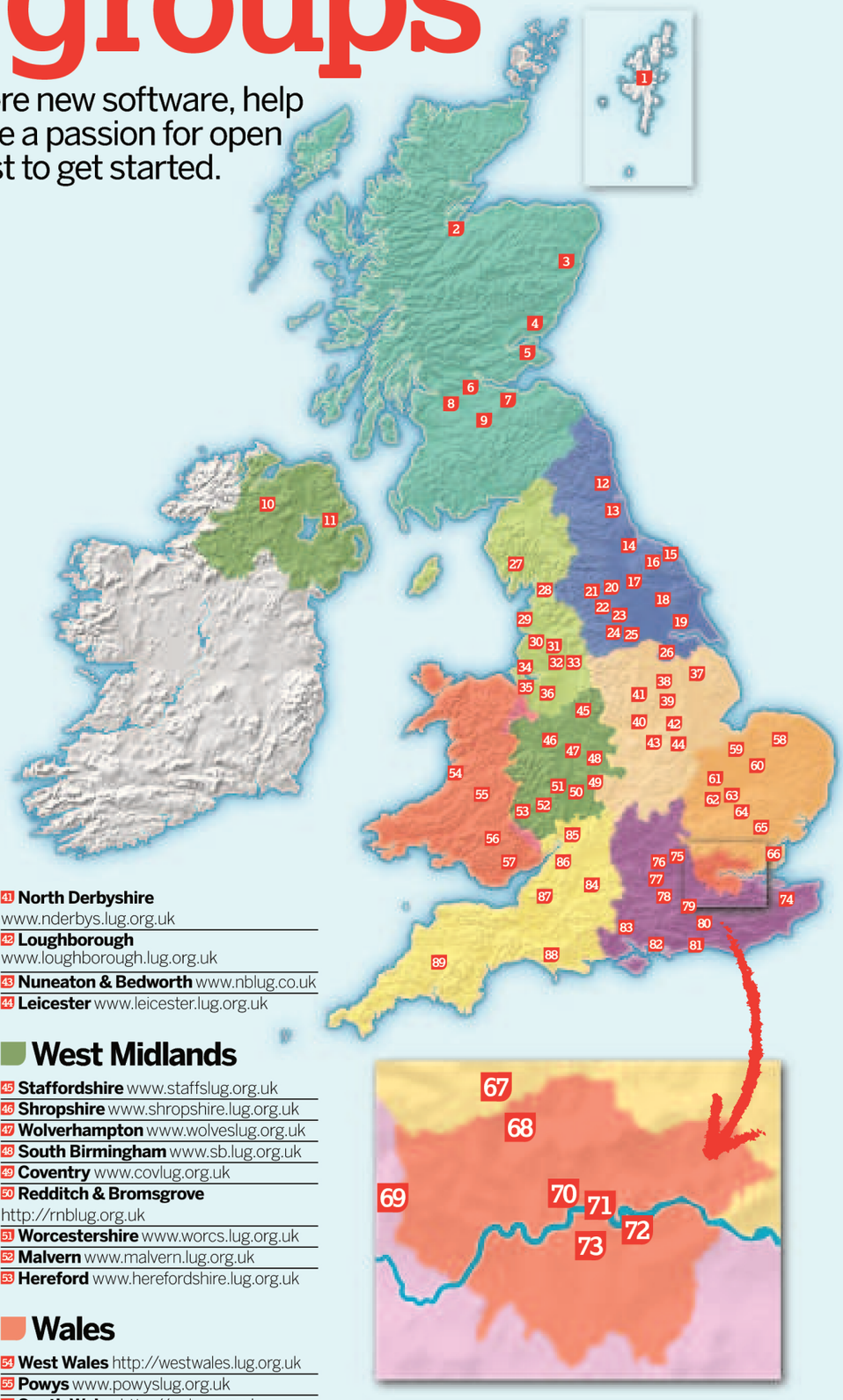
The ninth annual Libre Software Meeting takes place over five days. Keynote speakers include *Ekiga* developer Damien Sandras and bearded GPL framer Richard Stallman.

http://2008.rmll.info/?lang=en

LINUX FORMAT

User groups

Linux user groups explore new software, help with problems and share a passion for open source. Join a mailing list to get started.



Scotland

1. **Shetland** www.shetland.lug.org.uk
2. **Highland** www.highland.lug.org.uk
3. **Aberdeen** www.aberdeen.lug.org.uk
4. **Tayside** www.dundee.lug.org.uk
5. **Fife** www.fifelug.org.uk
6. **Falkirk** www.falkirk.lug.org.uk
7. **Edinburgh** www.edlug.ed.ac.uk
8. **Glasgow University** gla.lug@googlemail.com
9. **Scottish** www.scotlug.org.uk

Northern Ireland

10. **Derry** www.derry.lug.org.uk
11. **Belfast** www.belfastlinux.org

North East

12. **Tyneside** www.tyneside.lug.org.uk
13. **North-East** www.nelug.org.uk
14. **Cleveland** www.cleveland.lug.org.uk
15. **Scarborough** www.scarborough.lug.org.uk
16. **Ryedale** www.ryedale.lug.org.uk
17. **York** www.york.lug.org.uk
18. **Beverley** www.beverley.lug.org.uk
19. **Hull** www.thisishull.net
20. **Birstal & Howden Clough** bhclug@yahoo.com
21. **West Yorkshire** www.wylug.org.uk
22. **Huddersfield** www.hudlug.org.uk
23. **South Yorkshire** http://wiki.slugbug.org.uk/Main_Page
24. **Bassetlaw** www.basset.lug.org.uk
25. **Sheffield** www.sheflug.org.uk
26. **Doncaster & Scunthorpe** www.scundog.org

North West

27. **Cumbria** www.cumbria.lug.org.uk
28. **Lancaster** www.lancaster.lug.org.uk
29. **Blackpool** www.pcrecycler.co.uk/club
30. **Preston & Lancs** www.preston.lug.org.uk
31. **Accrington** www.accrington.lug.org.uk
32. **Salford University** http://linsoc.ussu.salford.ac.uk
33. **Manchester** www.manlug.mcc.ac.uk
34. **Liverpool** www.liverpool.lug.org.uk
35. **Chester** www.chester.lug.org.uk
36. **South Cheshire** www.sc.lug.org.uk

East Midlands

37. **Lincolnshire** http://lincs.lug.org.uk
38. **Mansfield** www.mansfieldlug.org.uk
39. **Nottingham** www.nottingham.lug.org.uk
40. **South Derbyshire** www.sderby.lug.org.uk
41. **North Derbyshire** www.nderbys.lug.org.uk
42. **Loughborough** www.loughborough.lug.org.uk
43. **Nuneaton & Bedworth** www.nblug.co.uk
44. **Leicester** www.leicester.lug.org.uk

West Midlands

45. **Staffordshire** www.staffslug.org.uk
46. **Shropshire** www.shropshire.lug.org.uk
47. **Wolverhampton** www.wolveslug.org.uk
48. **South Birmingham** www.sb.lug.org.uk
49. **Coventry** www.covlug.org.uk
50. **Redditch & Bromsgrove** http://rnblug.org.uk
51. **Worcestershire** www.worcs.lug.org.uk
52. **Malvern** www.malvern.lug.org.uk
53. **Hereford** www.herefordshire.lug.org.uk

Wales

54. **West Wales** http://westwales.lug.org.uk
55. **Powys** www.powyslug.org.uk
56. **South Wales** http://swlug.org.uk
57. **Rhondda Cynon Taff** www.rhonddacynontaff.lug.org.uk

International LUG of the month: EGLUG

Let your imagination float across the rising thermals of the Atlas Mountains, across the drifting sands of the Sahara Desert, and you'll find our international LUG for this month. EGLUG, as it's known, is the central Linux resource for Linux users based in Egypt. And it's a group with possibly the best LUG logo we've ever seen.

But there's more to EGLUG that good drawing skills. It's website, forums, blog and LUG is well organised, well populated and active. And it's the only LUG we've ever seen to have its own desktop wallpaper collection, featuring images from past events, the LUG logo and a ubiquitous pyramid. Meetings are split into two groups, one for Cairo and Alexandria, and EGLUG also organises an annual Linux festival. There were also some interesting results from a recent poll. 140 members voted on the best tactics to refresh EGLUG, and the conclusion was that there should be more events, more active members, more places to meet and more meetings. Which is true for every other LUG we've looked at. **www.eglug.org**

› Creating LUG wallpaper seems to us a great way of spreading the word about your LUG. If you create your own, let us know.

UK LUG news: All change for our LUG pages

We're thinking of giving these humble pages something of an overhaul and we'd like your help. We want these pages to be a central resource for Linux User Groups in the UK, as well as a launching platform for LUGs scattered around the globe.

The most useful information we can print is an events schedule, but this has always been difficult to achieve because we need six weeks' notice, and most LUGs don't seem to work six weeks in advance. Understandably, forward planning doesn't seem to be a strong point for many LUGs as members juggle busy professional and personal lives and the occasional hacking session. But we'd like you to organise a meeting at your local LUG explicitly for this purpose. We don't mean in any formal way. You can still have a beer. But if your group can come up with a brief outline of upcoming events, with an estimate of dates, we'd be more than happy to print your schedule. Not only will this help us, it should also help your LUG grow. Just drop us a line at the address below if you have an event we'd like to print, two months in advance if you can.

We'd also like to hear what you think we should be covering in these pages. Would you like some practical help on running and organising a LUG? Or advice how to start your own? We could talk to people running some of the more successful ones, and we can cover gatherings and events too. Just let us know what you'd like to see, and we'll make it happen. And keep your eyes peeled on next month's issue to see the changes. LXF **gmorrison@futurenet.co.uk**

› Tell us what you'd like to see in our redesigned LUG pages.

East Anglia

- 58 **Anglian** www.alug.org.uk
- 59 **Peterborough** www.peterborough.lug.org.uk
- 60 **Cambridge** www.cambridge-lug.org
- 61 **Northants** www.northants.lug.org.uk
- 62 **Milton Keynes** www.mk.lug.org.uk
- 63 **Bedfordshire** www.beds.lug.org.uk
- 64 **Hertfordshire** www.herts.lug.org.uk
- 65 **Chelmsford** www.chelmer.lug.org.uk
- 66 **Southend-On-Sea** www.sos.lug.org.uk

London

- 67 **Luton & St Albans** www.lust.lug.org.uk
- 68 **Watford** http://watford.lug.org.uk
- 69 **Berkshire & Thames Valley (Silicon Corridor LUG)** www.sclug.org.uk
- 70 **London Imperial College** www.union.ic.ac.uk/rcc/linux
- 71 **London (Greater)** http://gllug.org.uk
- 72 **London (Lonix)** www.lonix.org.uk
- 73 **Brixton** http://blug.org.uk

South East

- 74 **Kent** http://kent.lug.org.uk/klug/
- 75 **Aylesbury** www.aylesbury.lug.org.uk
- 76 **Oxfordshire** www.oxford.lug.org.uk
- 77 **Oxford Brookes University** www.obaoss.lug.org.uk
- 78 **Berkshire (West)** phillip.chandler@ntlworld.com
- 79 **Surrey** www.surrey.lug.org.uk
- 80 **Sussex** www.sussex.lug.org.uk
- 81 **Brighton** www.brighton.lug.org.uk
- 82 **Portsmouth** http://portsmouth.lug.org.uk
- 83 **Hampshire** www.hantslug.org.uk

South West

- 84 **Wiltshire** www.wiltshire.lug.org.uk
- 85 **Gloucestershire & Cotswolds** www.gloucs.lug.org.uk
- 86 **Bristol & Bath** www.bristol.lug.org.uk
- 87 **Glastonbury** www.lugog.org.uk
- 88 **Dorset** www.dorset.lug.org.uk
- 89 **Devon & Cornwall** www.dclug.org.uk

Other UK Groups

- **BSD User Groups** www.bsdgroups.org.uk
- **PHP London User Group** www.phplondon.org
- **UK Unix User Group** www.ukuug.org

Overseas

- **Channel Islands** myles@z3roadster.co.uk
- **Fuengirola (Costa Del Sol, Spain)** www.fuengirola.lug.org.uk
- **Goa (India)** http://tech.groups.yahoo.com/group/ilug-goa

Or start here to find your nearest LUG:

- **Asia** http://wikiwikiweb.de/LugsList
- **Australia** www.linux.org.au/usergroups
- **Canada** www.linux.ca/lugs
- **Denmark** www.lug.dk
- **Finland** www.flug.fi
- **New Zealand** www.linux.net.nz/node/view/11
- **Norway** http://lugww.counter.li.org/groups.cms?&cc=NO
- **Singapore** http://linux.meetup.com/5
- **South Africa** www.linux.org/groups/southafrica.html
- **Sweden** www.linux.nu
- **United States** http://lugww.counter.li.org/groups.cms

Get on the map

To promote your LUG in our UK news section, nominate a group for Overseas LUG Of The Month or update details, write to **LUGS! Linux Format, 30 Monmouth Street, Bath BA1 2BW, England** or email **lxf.lugs@futurenet.co.uk**. We'll need at least six weeks' notice of events. **www.lug.org.uk** has more information.

Mailserver

Write to Paul at *Linux Format*, Future Publishing, 30 Monmouth Street, Bath BA1 2BW or **lxf.letters@futurenet.co.uk**

Wot no extras?

I noticed recently that on the spine of previous *Linux Format* editions the content summary listed additional features such as "Special Sauce" or "Oompa Loompas". However, I was disappointed that LXF106 didn't include anything extra. We want more Oompa Loompas!
Mark Coleman

Paul says: We're flattered/surprised/pleased that someone noticed – random Easter Egg-like humour is sprinkled with love through every issue of *Linux Format* (including on some of the discs, but admittedly they're quite hard to find!) and to be honest we'd started to think that no-one was noticing them, hence the slightly more obvious addition to the magazine spine. This issue it's back, although a little more obscure. If you recognise it – and if you're Blessed with being a real geek you certainly should – please don't write in!

Myths of the future

I've been toying with the idea of building my own *MythTV* PVR for a while now. Then I saw Mythbuntu in LXF103 – that looks even better than *MythTV*!

Have you thought of doing an article on building a Mythbuntu PVR? This could be based on using available old motherboards and other recycled parts. HD PVRs are still fairly costly, but most people have the odd old computer lying around. The only bits that you might need to buy would be the TV card and the graphics card (which could be updated at a later date if you still have an old TV and an old graphics card). You could also include Mythbuntu and required downloads on your LXFDVD.

How about it guys?
Jacob Westerhoff

Paul says: We're in the process of trying to organise a feature on *MythTV* – watch this space!

Letter of the month!

The price is wrong

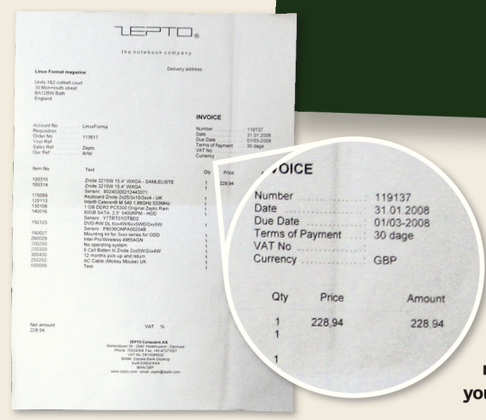
I bought this month's magazine [LXF105] pulled by the laptop guide, and after reading the review of the Zepto Znote 3215W I went straight to the website to get myself one.

Luckily enough they had the model on sale and in stock but the price was not anywhere close to the £269 quoted in the review. The closest to your price is a value package at £328.16 inc vat, without wireless: http://uk.zepto.com/Shop/Notebook.aspx?notebookid=673.

Beside the review I'm very impressed with the magazine and will continue to buy it as it helps me with new available technology followed by solid advice. Before I forget I would also love to have an Ubuntu sticker.
Daniel Rankapole

Graham says: £269 was the price we were invoiced for the laptop, and it was the price that made the Zepto stand out from the crowd.

We spoke to Zepto about this discrepancy, and it said the online price was a mistake and promised to re-instate the original price. As of writing, it has only decreased the price to £289.22, and this doesn't include wireless, which is an extra £32 for the standard installation or £52 for the Intel hardware we reviewed. While our opinion of the laptop still stands, this increase in price removes much of its competitive advantage. Well spotted!



» Behold the ocular proof. We're not just making this up, you know!

Logical tutorial

I've been looking into LVM in a home computing environment for years, and while I get by with the documentation on the internet, I really think that *Linux Format* could do a service to the community with a tutorial about LVM. It could remind us that it's LVM2 we now want; address its logical arrangement, the tools, why it's so useful on a one-disk computer and discuss ways to update a distro to an existing LVM installation.

» All the features of *MythTV* with none of the pain – Mythbuntu is brilliant.

(After all, that recommended **/home** directory can easily vary in size with LVM). Look at the Ubuntu 8.04 Readme on Ubuntu's filesystem structure – the info there is really helpful if you're thinking about how to set up multiple partitions.

Now, since those days 109 years ago with one computer, my home office has expanded to a laptop, the desktop (which now sports four physical hard drives, a PVR with two hard drives and a laptop, not to mention my jailbroken iPhone, my iPAQ 3600 PDA, and my Magellan PalmOS PDA. Of course, there are

» *Youtube-dl* is a handy tool for downloading videos from YouTube, to have around, but it turns out that there's an easier way to do it.

two external hard drives and a couple of printers, all networked. After I get Ubuntu installed, I realised that I have to make that printer (which is connected by USB to the main desktop) accessible to all the other computers.

I'm thinking about writing a tutorial on how to configure Windows and Linux to make that printer accessible via a Linux printer server or a Windows printer share from a Linux client or a Windows client (or decide it's easier to just buy a JetDirect external card and put the printer out on the network (and the two NDAS hard drives that I bought for backups) back on the network again.
Anon

Paul says: We've run an LVM tutorial in the past, but you're right – it's been a while, and it's too cool a technology to ignore for very long. I'll get on the case now. so you can expect something in the next three issues or so. Remember, folks: if you don't ask, you don't get!

Flash!

Is there any chance of a feature on creating a Flash Lite game for a mobile phone or MP3 player (eg iRiver Clix 2) – especially if it can be done without buying Macromedia Flash Professional 2004!
Giles Collingwood

Paul says: If *Linux Format* had a middle name, it'd be 'niche'. Is this suggestion a niche too far? I'll look into what we can do...

YouChoose

I was read the article in LXF106's HotPicks about how to download files to your computer using *Youtube-dl*. I use Ubuntu and have installed Flash using Automatix on numerous computers with ease, as I am running three Ubuntu computers myself and have converted 12 other people to Ubuntu. I have found that when you play a YouTube video (and any other Flash video from other websites) that it caches it to the temp file in the main tree, so if you pause the video and let it cache the full file will be there in the temp file. Then all you have to do is cut and paste to any folder you want so you have the file to play when you want. To change it to another format, all I do is **ffmpeg -i** (file name) (output file name + extension) in the command line.
Damian Ainsworth

» Whatever your DVB device, you must get the firmware.

Paul says: Thanks for the tip – that's certainly an easy way of doing it!

TV cards

Your Roundup of tuners [in LXF106] interested me greatly – particularly as it referred to marginal reception, which is often ignored by other reviewers.

What puzzled me though was your reference to firmware. You say that all the models tested need firmware, yet your instructions specify installing it to a directory. All the firmware I have used in the past had to be installed into a chip but I have never installed firmware for my tuners. What is it actually supposed to do?

Finally, the software I use most is *RedButton* (from SourceForge), which provides BBCi and Teletext. It really is time you put it in HotPicks or at least on the DVD.
CP Wallis

Paul says: Most tuners don't have persistent firmware – a little like WinModems and many Wi-Fi cards. As a result, the firmware needs to be loaded when the device is plugged in, so the USB bus uploads the firmware from the directory to the device.

Bomb da bass

Most PC speakers comes with a separate bass, and this bass is normally way too loud – so loud that I get a headache from listening to music on my computer without tuning the bass down. I know that *Amarok* has a built-in equaliser, but I prefer *Rhythmbox*.

In Linux and Ubuntu there are at least 10 different email clients, music players, web browsers, word processors and so on – I bet there are 10 of everything just waiting to be installed. With this in mind I searched for an equaliser, and guess what? There wasn't anything there! Maybe everybody got so happy and excited about getting the sound to work in first place, that they forgot to make an equaliser? I can't belive that nobody in the community has thought about this.
Kim Nikolaisen, Oslo, Norway

Graham says: Hey Kim, don't fret! Equalisation is the reason most »

Happy hardware hackers

It started as a rumour, but now the clamour for has risen to a roar – you demand more hardware hacking!

The Fiesty Fridge

I have just picked up and done my initial leaf through of your latest offering (or at least what would constitute you latest, as I live in the Great Southern Colony) and came across an letter in your Mailserver section entitled The Power of PS3 [LXF105].

I would like to add my two cents worth in relation to that letter and your reply. I'd love to see some articles about what devices people have shoehorned a Linux distro on to, whether that be Fedora in a fridge, Arch on an Eee, or Ubuntu on a pair of high-tech undies. The possibilities are endless, both from a technical perspective and a amusing one as well. I hope this idea gains some traction in your future publication and look forward to reading some people's daring adventures in the land of extreme Linux adaption.
Scott

The Talkie Toaster

I would love LXF to have a feature, (or series?) where you talk about, and show us, how to put Linux on our toasters and refrigerators! We all have stuff lying around that we need to put to life in a new way. I recently installed Linux on my Linksys router, and I'm now using it as a wireless bridge for my Neuros OSD. I want to put Linux on my Sony Ericsson W800i, and my old iPod got much more interesting when I put Linux on it!
Torstein, Norway

Paul says: OK, you've convinced me. I'll set this one up for you as soon as possible. Of course, that's only slightly motivated by the fact that I'd love to read such an article too – although perhaps Linux on underpants might just be a step too far, as there are some places where Ubuntu's colour scheme would be most unwelcome!

» music players exist. How else could we butcher the carefully crafted sound of a multi-million dollar CD, mastered in a professional recording studio by an engineer with 120 years of experience? And while it's true that *Rhythmbox* can't be coaxed into such sound signal savagery, you can scupper its audiophile credentials with a number of crafty techniques.

Many sound cards feature built-in equalisation, for example. Just open the mixer applet and enable the Bass and Treble mixer controls in the Preferences window. If your hardware doesn't support this option, you have two alternatives. PulseAudio, the sound abstraction layer used by Ubuntu, can be coaxed into passing the audio through a LADSPA equalisation effect, but it's a messy solution. This leaves the only other option: get a decent pair of speakers.

Plink plonk

I just came across the LXF104 News story about Ubuntu Cola. Now this may be fine for the younger set, but I must admit that I prefer something with a bit more kick to go with my Linux. Recently, a friend gave me a bottle of Ubuntu wine from South Africa as a token of appreciation for installing Ubuntu on one of his systems. I felt that it was only fitting that it be cooled in the remnants of a snow bank prior to consuming on a warm spring day. But before opening the bottle I decided that a picture should be forwarded to your magazine to help promote Linux and wine on the desktop.
Don White, Ottawa, Canada

Paul says: Nice! I think we ought to get one of these in for, er, review!

» **There's nothing like a cheeky glass of Sauvignon Blanc.**

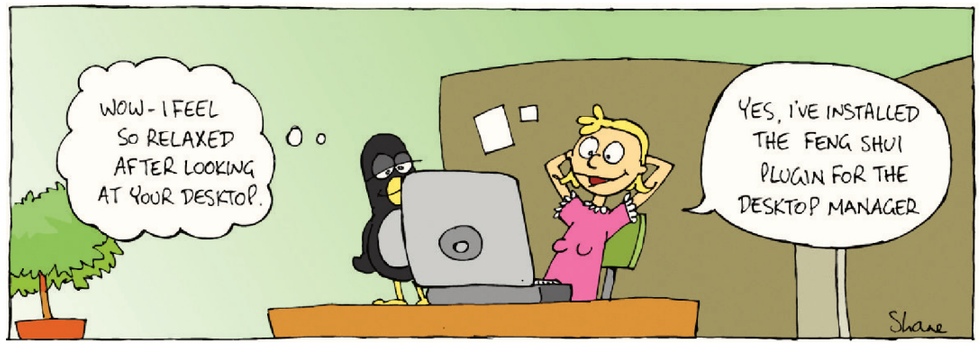
In like Mint

Just a quick note to say thanks. I have just installed Linux Mint on my laptop (and now my girlfriend's) and it's running like a dream. As a lifelong Windows addict purely because Windows comes installed on new PCs, I have never had the courage nor the energy to bite the bullet and switch to Linux, but thanks to that easy easy install I am now writing this letter on my shiny new Linux machine.
Alan Orr, Buckinghamshire

Paul says: Mike is also a closet fan of Linux Mint, largely because it – like PCLinuxOS – has a fresh take on what you can do with open source. Personally I'd rather they were a little less in favour of proprietary codecs, but I can appreciate why people want the extra ease of use.

Helpdex

shane_collinge@yahoo.com



Backups

Juliet Kemp's remote backups tutorial in LXF105 describes what I have set up a long time ago. I have a Linux file server running in my utility closet with one hard drive reserved for backups. The *Cron* jobs take care of the daily incremental backups and monthly full backups.

For remote backups, I need more space than Gmail can offer, and I am cheap. The solution I found is one of these network attached HDs that run Linux on an ARM processor (such as the Excito Bubba reviewed in LXF104). I use a LaCie Ethernet Disk Mini, on which I hacked a *chroot*ed Debian Etch. I connected the NAS to my mother's DSL at her house on the other side of the country.

Using Fuse/SSHFS/EncFS and *Rsync*, I automatically make a full remote backup of my critical directories over a secure link. I use EncFS to make sure that nobody except me can read the backup drive. Just make sure you store a backup of the EncFS encryption key outside your server.

Hans, The Netherlands

Paul says: I think that's advice important enough to be reprinted in big, bold letters: **MAKE SURE YOU STORE A BACKUP OF THE ENCFS ENCRYPTION KEY OUTSIDE YOUR SERVER**. You have been warned!

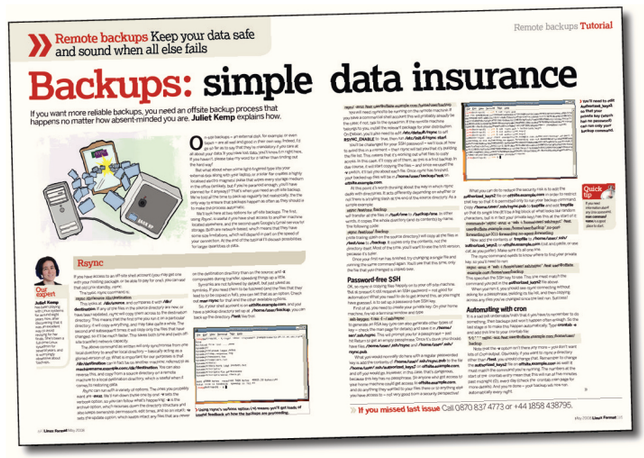
Talkin 'bout money

I have greatly enjoyed the few print editions of *Linux Format* that I have been able to find in the US. I'd like to get a subscription, but the present value of the US dollar makes it pretty expensive.

I assume that a significant portion of the subscription lies in the postage. Have you considered publishing an email or PDF version for electronic, rather than postal delivery?

John Rentner

Paul says: Here at LXF Towers we're only the talent. However, we have a special bright red telephone line to Stuart Anderton, the publisher of *Linux Format*, who is the money.


Remote backups Keep your data safe and sound when all else fails

Remote backups Tutorial

Backups: simple data insurance

If you want more reliable backups, you need an offsite backup process that happens no matter how absent-minded you are. Juliet Kemp explains how.

Rsync

Password-free SSH

Autorunning with cron

If you missed last issue Call 0870 837 4773 or +44 1858 438795.

» You can send your backups to Gmail or your mum's NAS...

Stuart says: We've been looking at a number of options for electronic delivery of several of the magazines we produce here at Future. Unfortunately most of the methods that are best for us don't work with Linux, which is a bit of an issue! We can't just publish a 'raw' PDF, as while most of our readers are as honest as the day is long, I'm told that there are people out there who will distribute files over the internet without paying for them (*Heroes* season 2's finale was a bit weak I thought). As soon as you bring DRM into the equation, things get tricky – especially for a magazine about open source. Finally there's the problem that **LXF** isn't just a mag, it's a DVD too. We want to get **LXF** to as many people as possible, and if we can find a way to do it electronically we will. LXF

PCAnswers

PRACTICAL SOLUTIONS FOR A BETTER PC

GET MORE FROM YOUR DIGITAL FILES

PLUS! Make free mobile phone calls with Skype

AND ALL THIS...

- » Organise your life with the Sunbird calendar
- » 20 great tips for perfecting your email
- » Fix problems between different Office formats
- » Repair your old MP3 player today!

ISSUE 186 ON SALE THURSDAY 29TH MAY

LINUX FORMAT Reviews

All the latest software and hardware reviewed and rated by our experts

GRAHAM MORRISON is at home playing with his new synthesizer that arrived yesterday.

Keep it real

Distro release time reminds me of the build-up to Christmas when I was a child. Months before 25 December, I'd draw out a matrix, seven squares across and fourteen down. The squares were usually smudged with leaking Biro, and into each I'd write down the number of days remaining to the big event. The number 98 took it position in the top-left corner and 1 in the bottom-right. It was an advent calendar for the impatient. Usually, around day 50, I'd even start reading *A Christmas Carol*, as this seemed the most festive fiction I could find. The end result of all this overinflated anticipation was inevitable. Even if Father Christmas himself had appeared at the end of my bed, and personally handed me the keys to a Lamborghini Countach, I would have been disappointed. By the 26th, I was entirely despondent and would rather put the whole sorry event behind me.

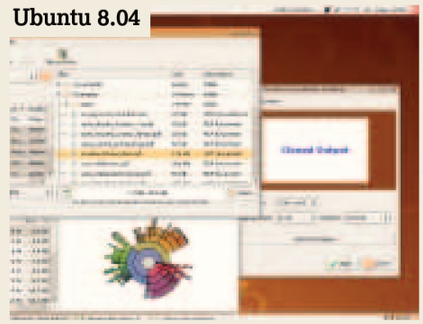
So it is with the Spring and Autumn release festivals. We now spend a large proportion of the year counting down release dates on overgrown advent calendars, our collective anticipation waxing and waning in tune to the cycle of the seasons. When a release does arrive, it rarely matches our expectations. Each release is an improvement over the previous release, but sober development is so difficult to get excited about. What really needs to change, of course, is my attitude. Linux is getting stronger. And while there is rarely enough innovation in each six month release to warrant decorations, cards and a big party, the effect of this constant development is dramatic. You only have to look at the state of Ubuntu in 2006 to see how much has changed, and that is worth celebrating.

graham.morrison@futurenet.co.uk

Our pick of this month's releases:

Book reviews p36

Ubuntu 8.04



› **It's big, it's brown and it's coming to an enterprise server near you – Ubuntu 8.04.**

Neuros OSD p27

› **It's tiny, it's black and its makers positively encourage you to hack it – the Neuros OSD.**

Our verdict explained

All the products that we review are rated from 0 to 10, with 10 being highest. The four categories we use to rate products are usually features, performance, ease of use and value for money, but software available without a charge might be rated on documentation instead of value for money. Regardless of the four criteria used, we always give an overall score out of ten that sums up our thoughts.

LINUX FORMAT TOP STUFF

Products that stand out from the crowd may receive our prestigious Top Stuff award. Only the best is considered for this award – scoring highly isn't sufficient by itself.

When reviewing free software, we will usually use the recommended distribution of the software. In some cases this will be hand compilation using *GCC*, but if the developers recommend Autopackages these will be used instead.

LINUX FORMAT Verdict

Google Earth

Developer: Google
Web: http://earth.google.com
Price: Free under proprietary licence

Features	10/10
Performance	9/10
Ease of use	9/10
Documentation	9/10

» *If all the world's a stage,* Google Earth *is the theatre. Easy to use, utterly addictive and reassuringly practical.*

Rating 9/10

Ubuntu 8.04 LTS

Will this new long-term support release from Canonical be hardy enough to withstand the **LXF** test fest? **Andy Hudson** finds out.

In brief...

» Linux distro with extended support; also consider CentOS, or RHEL and SLED with support contracts.

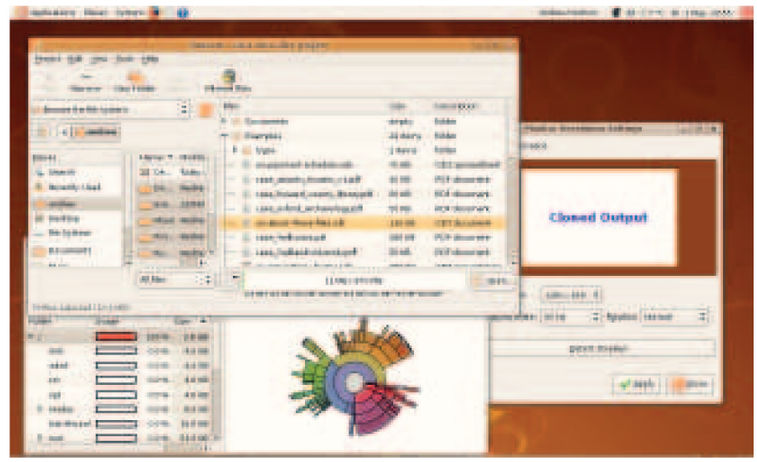
Key software

» Gnome 2.22.1
» OpenOffice.org 2.4
» Firefox 3 beta 5
» Kernel 2.6.24
» GCC 4.2.3
» Pidgin 2.4.1

If you haven't been living in a hole over the last four years, you're very likely to have heard of Ubuntu, one of the more popular Linux distros currently available. In our brief first look on the **LXF** website, we noted that this was the second long term support (LTS) release in four years and that a lot was expected of it. Now we've had more chance to play with the finished product, we can delve into what's actually been delivered with Ubuntu 8.04 LTS (also known as the Hardy Heron).

The first thing to consider is that this version of Ubuntu has been designed for stability. It's going to be supported with security updates for three years, but the key technology isn't going to budge. If you're working in a business then this kind of stability is welcome; after all, how many major upgrades (aside from the myriad security fixes) has Windows XP had in the seven years or so since its release? The average Linux user at home, however, will want to keep track of the latest and greatest releases, so an LTS release is probably not for them.

So what does the distro actually deliver? Well, as mentioned already, it ships with Gnome 2.22.1 and the 2.6.24 kernel. It also includes *OpenOffice.org 2.4*, *Evolution* and *Rhythmbox* as standard, along with one or two other applications that are additions to the core Ubuntu installation. However, stepping back to the actual installation reveals an important addition in *Wubi*, the Windows Ubuntu Installer, which allows Windows users to try Ubuntu without repartitioning their drive.



› **The Hardy Heron takes flight – will it soar on to even more desktops?**

> **"Wubi allows Windows users to try Ubuntu without repartitioning."**

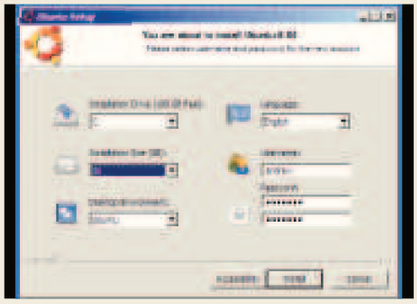
Wubi Wubi Wubi Wubi!

Instead, you create a file in your Windows system that *Wubi* then uses to boot into. It also adds an entry to the Windows bootloader, allowing you to easily choose between booting into Windows or Ubuntu. The actual installation using *Wubi* is pretty painless, as you only need to enter your choice of password and verify it before the installation starts. On a reboot, there are some more minor configuration steps (all automated) before you are able to log into your Ubuntu system.

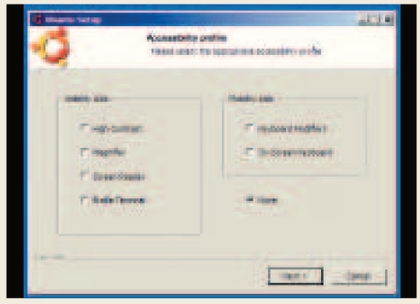
What Ubuntu has succeeded in doing is providing the simplest bridge for Windows users to cross – one that doesn't rely on repartitioning the hard drive. Ubuntu should be commended on including this, and it will only serve to enhance its already enviable reputation for ease of use.

But *Wubi* is only one part of this release, albeit a fairly significant one. What's probably of more interest to day-to-day

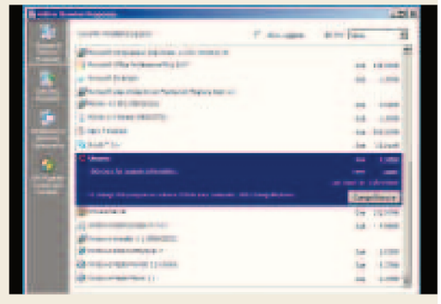
Step by step: Install with Wubi



1 Simple
Installing Ubuntu on a Windows box with *Wubi* is simplicity itself – just follow the instructions.



2 Accessible
Need accessibility options from the off? *Wubi* lets you choose what you need at install time.



3 Clean
Wubi can also easily uninstall Ubuntu. There really is nothing to fear, MS lovers...

users are the changes to Gnome. Landing with the very latest release, Gnome 2.22.1, Ubuntu offers the best Gnome system yet and comes with some great new touches that add to the whole Ubuntu experience. First, and perhaps most useful in our big wide world, is the world clock implementation built into the Gnome clock. By clicking on the clock, you'll see the usual calendar drop-down; look closer though and you'll now see a Locations drop-down arrow that allows you to add multiple worldwide locations, giving you the local time for your selection. What's even handier is that if you choose the time zones that you'll be working in, you can set your system time and date to that zone by simply hovering over the location and clicking the set button.

Say cheese

Another application that has caused much interest is *Cheese*, the *Apple Photo Booth* wannabe that is part of Gnome. Ubuntu doesn't include *Cheese* by default, although it's available as a fully supported package through *Synaptic*. Happily, Ubuntu detected our Logitech QuickCam Pro 3000, and we were able to take photos and videos with no problems.

As mentioned earlier, Ubuntu 8.04 is an LTS release, meaning that users get extended support for this version. However, unlike the Dapper Drake, this does not include Kubuntu, the KDE flavour of Ubuntu. There was an initial outcry when this was announced, but you have to delve deeper to understand why this decision was made. At the point of release, KDE 4 would have been available for only a couple of months, which made it difficult to include in what should be a stable distro. Was it established enough for inclusion? Probably not, so Canonical chose not to include it as part of the default Kubuntu installation, instead keeping the existing KDE 3.5 window manager in place. However, the developers know that supporting KDE 3.5 for the next three years is going to be difficult, as active KDE development will carry on with version 4 making it hard to support a now outdated window manager for any great length of time. You can still get KDE 4 installed for Ubuntu, but it does require downloading a lot of packages and perhaps isn't recommended for the faint of heart.

Ubuntu is now in a position to directly challenge RHEL and SLED, on the desktop at the very least. Having already had one LTS release under its belt, their second attempt seems destined to make its way on to many desktops across the world. But – and it's a big but – Ubuntu doesn't really seem to be putting in the development that Red Hat and Novell do when they are working towards a major release.

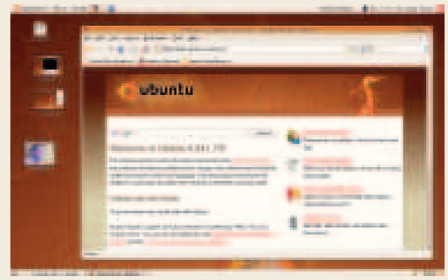
› ***Cheese*, Ubuntu's webcam app, is little more than a gimmick, but it kept us amused for a good five minutes.**

Graham says...

"I installed Mandriva at home this month for the first time in years, and it felt like a breath of fresh air. I still love Ubuntu, but it needs more innovation to maintain momentum."

The Firefox question

Hardy Heron is intended to be a stable and enterprise ready distribution that can be used by anyone from individual users right up to large corporations. So it's quite a surprise that Canonical decided to go ahead and ship the distro with a beta version of *Firefox 3* (beta 5). Granted, the final release of *Firefox 3* may not be far away, but it's still beta software no matter how stable it is.



› **Ubuntu is taking a chance with the inclusion of *Firefox 3* – it is still in beta after all.**

> **"Ubuntu is now in a position to challenge RHEL and SLED."**

Too much, too soon?

The Hardy Heron maintained the same aggressive 6-month release cycle as all the other Ubuntu releases (with the exception of 6.06 LTS and 6.10, which were eight months and four months respectively). RHEL 5 was produced over a period of 18 months, giving Red Hat chance to stabilise its platform. Red Hat works closely with Fedora to test certain bits of functionality that may or may not end up in RHEL. Ubuntu doesn't really have this – each release is largely built upon the last, and Ubuntu certainly hasn't taken any major risks with its releases as of late. Since Dapper (6.06) was released, we have had next to no problems with any of the subsequent releases, up to and including the Hardy Heron. Perhaps Ubuntu and Canonical are afraid of taking risks; to be honest, they're probably in the best position to break with the mould of traditional Linux distros.

A simple Gnome refresh and updates of the current applications are no longer enough in this race to become the Microsoft beater. Yes, Ubuntu has implemented PolicyKit, allowing you to view options and elect to change them using superuser powers if you need to. Yes, it now has *PulseAudio* and a handful of other technologies. However, most of the other distributions have already implemented or are shortly to implement these technologies, making the whole distro world a bit of a challenge to see who can implement what first. We'd definitely like to see Ubuntu strike out and implement something ground breaking, such as exploring new methods of input or desktop technology. We've got a decent platform in Ubuntu Hardy Heron, so why not use the release cycle for 8.10 to start the mind shift away from the constant updates and do something truly revolutionary? LXF

LINUX FORMAT Verdict

Ubuntu 8.04 LTS

Developer: Canonical
Web: www.ubuntu.com
www.techradar.com/328200
Price: Free under GPL

Features	7/10
Performance	7/10
Ease of use	7/10
Documentation	7/10

» *Ubuntu is suffering from sevenitis. There's nothing here to get excited about – business users will probably love it.*

Rating 7/10

Axigen 6.0

Ever wanted to set up a mail server on Linux but been frightened off by arcane commands and config files? **Chris Brown** investigates a pain-free alternative.

In brief...

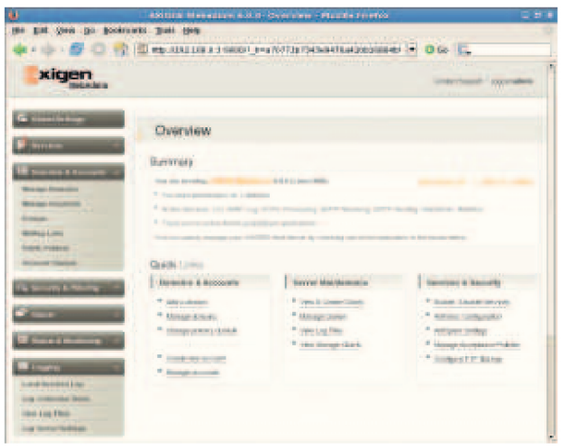
» An all-in-one mail server solution for Linux, featuring point-and-click administration. Open source alternatives include *Courier*.

Setting up a mail server has always been something of a rite of passage for Linux system administrators, and regular readers may remember that we devoted a tutorial to it in **LXF103**. So it was interesting to take *Axigen* for a spin, since ease of setup and ease of use are two of its key selling points.

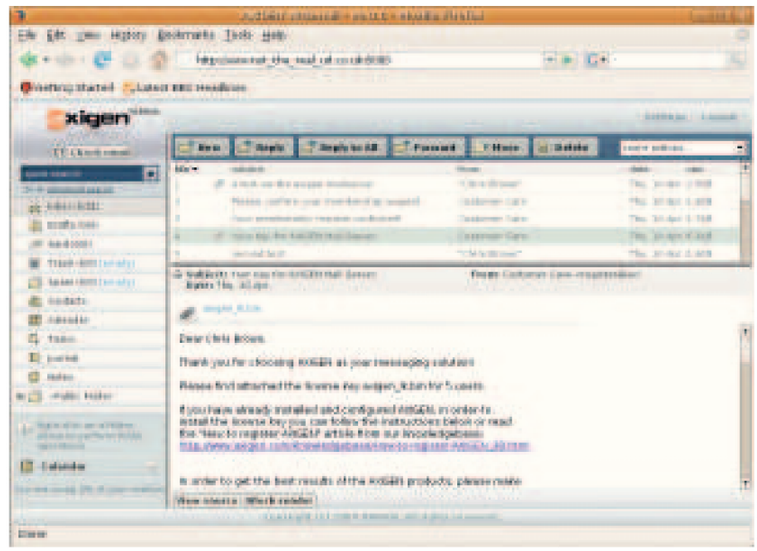
Axigen is a complete mail server solution. It provides SMTP, POP and IMAP servers, a skinnable webmail server, list server, hooks to anti-virus and anti-spam applications, and a calendar/diary tool. In terms of open source solutions, it's roughly equivalent to *Sendmail* or *Postfix*, plus *Dovecot*, plus *SquirrelMail*. The product is available for download from *Axigen*'s website. What you get is a compressed tarball of either an RPM file or a Deb file, which needs to be untarred and installed from a root command prompt. It installs into **/opt/axigen** and is one of the few third-party products that actually puts itself where the Filesystem Hierarchy Standard says it's supposed to go!

> "Forty minutes wasn't too bad for complete setup of a mail server."

Then there's a wizard to run, which takes you through some basic one-time configurations. For example, you get to pick an administration password, specify the "primary domain" that *Axigen* will serve and determine which services will run, and which interfaces and ports they'll listen on.



› ***Axigen*'s main screen provides access to all the administration screens. Even the most die-hard Windows admin would approve!**



› **The *Axigen 6.0* mail server provides a full-featured, web-based mail interface, in this case listening on port 8080 to enable it to co-exist with *Apache*.**

This is the geekiest part of the process and uses an ugly *Ncurses*-style interface.

Once this is complete, you can start the service. All other configuration is done via a web-based tool that listens on port 9000. From the main admin screen (see below left) you can add new mail domains, create user accounts in those domains, manage mailing lists, examine mailer queues and log files, set up anti-spam filters and more.

Up and running

Axigen has a Flash-based demo that steps through all this initial configuration. It's not the slickest production in the world, but it serves its purpose. We took the plunge and installed it on a live mail server (remembering to shut down the SMTP and POP servers that were previously running). It took 15 minutes to download and install the product and run the first-time configuration. It took ten minutes more to upload the licence file, create the domains and add a few users. There was, to be honest, another 15 minutes in the middle, while we tried to remember how to open up the additional ports in our firewall. Even so, 40 minutes wasn't too bad for complete setup of a mail server.

Axigen isn't free. The entry level licence costs €250 and handles up to 25 mailboxes. From there, a variety of pricing levels extend up to €2,700 for the Service Provider Edition and 5,000 mailboxes. If you want to trial the software, the downloaded version is good for 30 days without any licence keys at all (but puts a marker into all messages it handles to point out that you're using trial software). You can also register for a free licence key that's good for one year, but only supports five mailboxes, which must all be in the same domain.

True Linux hackers would scorn the thought of spending €250 to do something they can already do with open-source solutions, but for most of us mortals it could be money well spent. LXF

LINUX FORMAT Verdict

Axigen 6.0

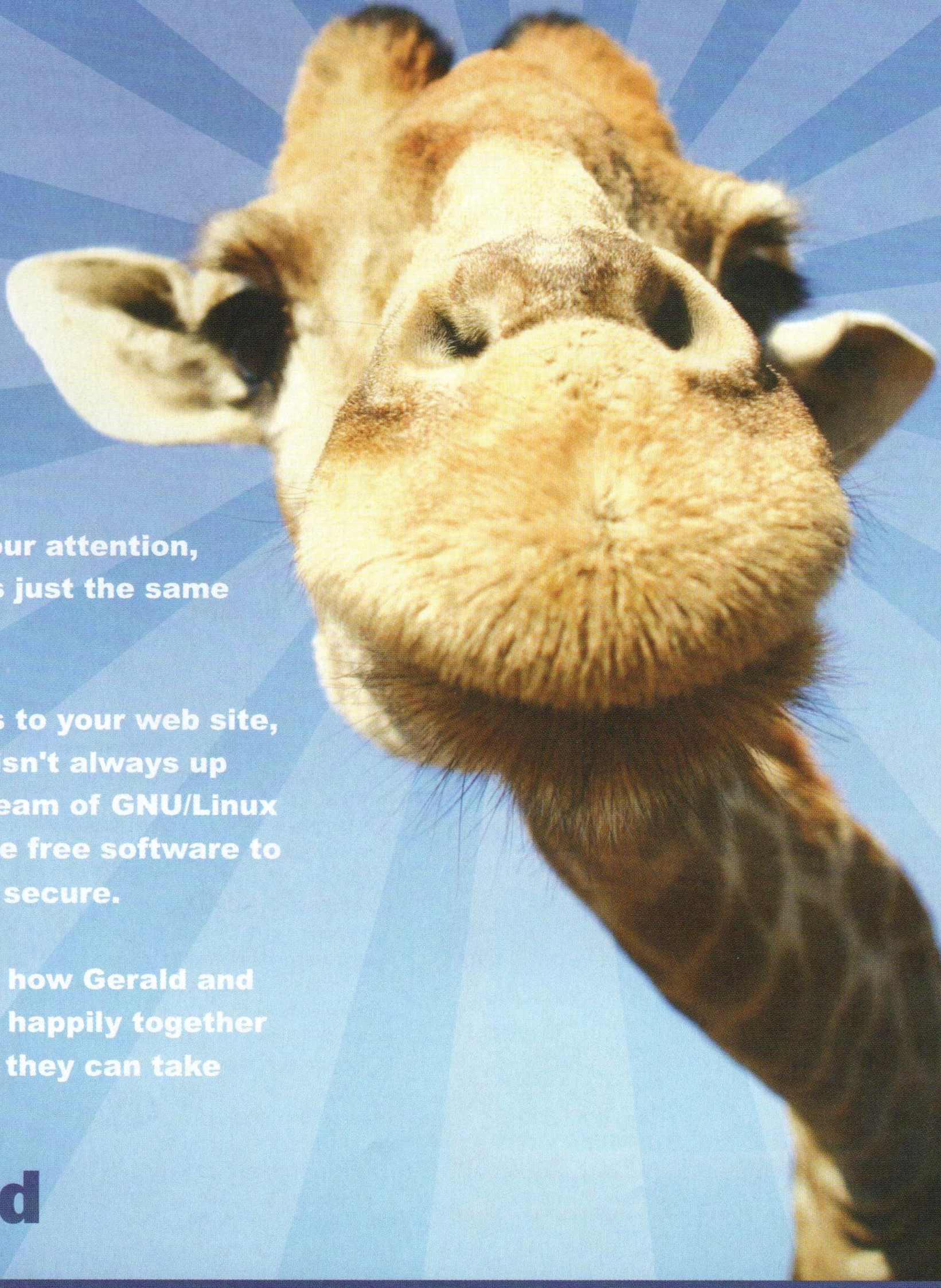
Developer: Gecad Technologies
Web: www.axigen.com
www.techradar.com/328251
Price: €250 (entry level for 25 mailboxes)

Features	9/10
Performance	8/10
Ease of use	9/10
Value for money	6/10

» *Check it out if you want a mail server that's fully featured and easy to use.*

Rating 8/10

PENGUIN?



Now that Gerald has your attention, he needs to keep it. It's just the same with hosting.

You can attract visitors to your web site, but that's no good if it isn't always up and running. Gerald's team of GNU/Linux experts live and breathe free software to keep your site fast and secure.

Get in touch to find out how Gerald and Tux have been working happily together for 10 years and where they can take you next.

we're good

The Positive Internet Company

0800 316 1006
www.positive-internet.com
good@positive-internet.com

Mandriva 2008.1

Could 2008 be the year that Mandriva gloriously re-establishes itself as the premier user friendly Linux distro? **Nick Veitch** assesses the odds...

In brief...

» User-friendly Linux distro whose USP is gradually being usurped by Ubuntu, PCLinuxOS *et al*.

Cast your mind back to the heady days of 2007. It was perhaps a low point for Mandriva, as the distribution was thoroughly eclipsed by Ubuntu and a resurgent Fedora. Even hitherto unknowns like PCLinuxOS (itself based on Mandriva) were getting better coverage and feedback. Mandriva, which had once been the very bleeding edge of functional distros, languished in a miasma of old kernel versions, half-finished tools and out-of-date everything.

This year has seen a startling return to form, with the Spring release including pretty much the most up-to-date collection of open source software as you could hope to find together on one DVD. Built on a 2.6.24.4 kernel (only a few weeks old!), it includes *Firefox 2.0.0.13*, Gnome 2.22.0, *Glibc 2.7*, *Gimp 2.4.5*, *OpenOffice.org 2.4* the latest ATI and Nvidia proprietary drivers, and KDE 4 full and minimal versions as well as 3.5.9.

It's not all just about the old favourites either: there are some interesting new integrated additions to the software repository. *Avant Window Navigator* is an OS X Dock clone that looks pretty swish without compromising useability. Then there's *Miro*, a sort of media stream metamanager that can basically turn your Linux machine into a TV, constantly streaming from selected sources of podcasts and other media.

› **Pre-installed plugins mean you can just hop on the web and expect it to work.**

One of the more useful but less attention-grabbing additions is *Conduit*. This is a Gnome-based synchronisation tool whose goal is to allow data to be usefully and seamlessly synced between applications and/or locations.

Run every game

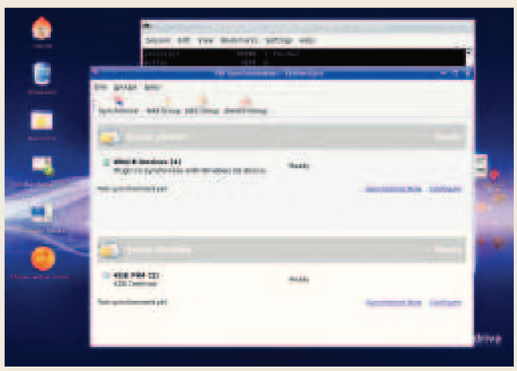
The PowerPack edition includes the *Wine*-based *Cedega* software, which does a pretty good job of allowing you to install and run a huge variety of Windows games, but not all of them. If the game you want to play is more than three months old and that doesn't have some weird copy protection, you should be okay. You can at least check the *Cedega* site for a comprehensive list of working games.

The PowerPack edition also comes with codecs for all sorts of video and audio needs – you can fire up *Firefox*, zoom over to YouTube or BBC's iPlayer and not give a jot about installing plugins and restarting bits and pieces. Ace!

Running Mandriva for the first time in about a year, it seems like nothing has changed, yet everything has changed. This time last year Mandriva was out of date, clunky, and broken for the wrong reasons. This time around it oozes care and attention to detail, and if the odd thing doesn't work, well, that's the price you pay for having the most up to date software.

The PowerPack version makes everything that little bit more accessible due to the integration of non-free technologies (and of course, with three months of technical support and other services). If you are one of the many users who have neglected Mandriva since 2007, this is the release you should be looking at if you want to bring that cheery yellow star back to your desktop. LXF

In sync



› ***KitchenSync* takes care of keeping everything up to date.**

Mandriva 2008.1 makes great claims about syncing with Nokias, BlackBerrys, Windows Mobile devices and more. We believe that it does work, because we have watched the video: **www.youtube.com/watch?v=ZMNpI3RUwo8**. Unfortunately, it didn't work for us. Mandriva correctly detected Our Windows Mobile gadget as an RNDIS device, but thereafter steadfastly refused to acknowledge it. It normally takes a bit of trial and error, so while the syncing is good, it's not perfect.

LINUX FORMAT Verdict

Mandriva 2008 Spring PowerPack

Developer: Mandriva
Web: www.mandriva.com
www.techradar.com/328629
Price: €69.00

Features	9/10
Performance	8/10
Ease of use	10/10
Value for money	8/10

» *This could be the Mandriva release that changes your mind. Try it now!*

Rating 9/10

Neuros OSD

LINUX FORMAT TOP STUFF

If you're looking for an open source home media player that isn't called MythTV, **Graham Morrison** has found one.

In brief...

» A TV-connected media centre that can encode video and play it back, listen to music, browse your photos and more. The only other alternative is *MythTV*, although you'll need to supply the hardware.

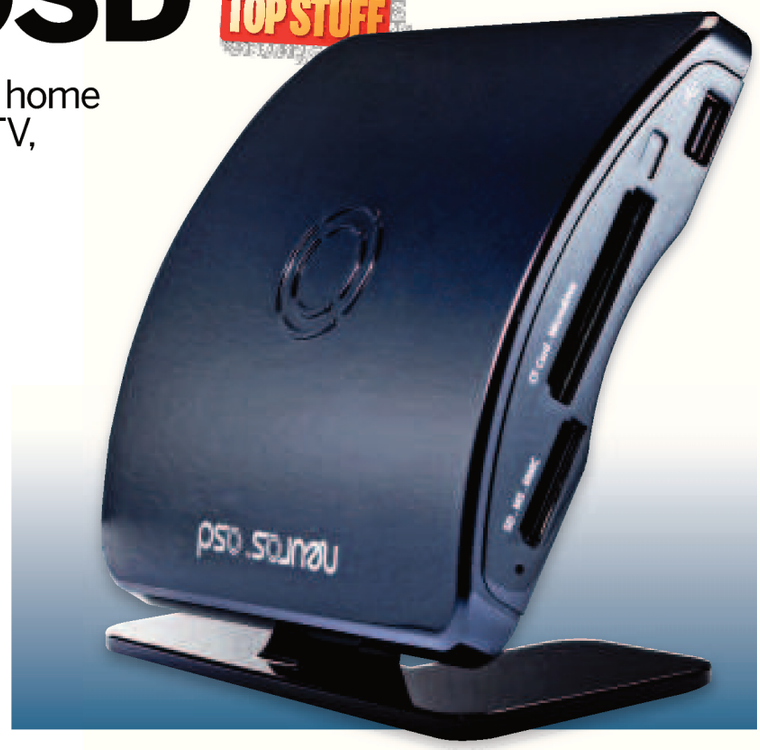
Of the hundreds of Linux-powered devices on the market, very few emblazon 'Powered by Linux' on their packaging, and fewer still encourage users to hack to the operating system. For these reasons, the Neuros OSD is a refreshing change. It's a video recorder for the 21st century. Connect almost any video source and the Neuros spits out pre-formatted video, suitable for playback on a television or portable video player.

Its packaging features two logos. One's the familiar Tux. The other proudly declares, 'open source'. Things are even more surprising when you open the box. The Neuros is a lot smaller than it looks in photos, measuring a diminutive 14x14cm.

It connects to a network through the Ethernet or wireless bridge (there's no on-board wireless), and video input is provided by either the SVideo input on the side of the case, or composite video through an RCA connection. Output is restricted to composite RCA only, and leads for both are provided along with stereo audio phono connectors for input and output. In Europe, SCART adapters are also included. The only functionality missing is the ability to drive a high-definition display.

"Plugging the Neuros OSD into your television brings the unit to life."

There are ports and slots for every storage device we could think of: USB, Sony's Memory Stick Duo and Duo Pro, CompactFlash, SD and MMC cards. The internal memory is limited to 32MB, and holds version 1.6.1 of the BusyBox Linux operating system, but recent models bundle a CompactFlash card for increased internal storage. This holds graphical files for the *Qt*-based user interface.



› **Looks can be deceptive. The Neuros is little bigger than an audio CD case, but it crams in nearly every connection and memory card slot you could need.**

Turn on, tune in

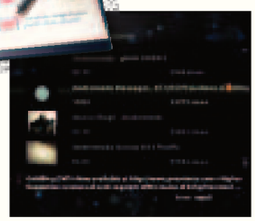
Plugging the Neuros into your television brings the unit to life. The user interface is centred on a hierarchical menu system and the bundled remote enables you to skip between scheduling recordings and playing media from any source (including *Samba* shares and UPnP servers). An IR Blaster is included and the Neuros can be configured to send infra-red channel-change instructions to your satellite or cable box.

Everything's easy to navigate and we found it worked well. We watched movies in DivX, *QuickTime* and H.263 formats, at various resolutions, without problems. We also listened to Ogg Vorbis, MP3 and FLAC audio files, wishing there was a digital output for audio. The Neuros handled everything we could throw at it.

But there's more to the Neuros, and it has something to do with the 'open source' sticker. With the exception of a couple of proprietary codecs, the source code for the entire project has been released into the wild. There's an active community of developers adding functions, several of which have been rolled into the official distribution. We installed a web-based interface and an FTP server, and Google Summer of Code 2008 proposals include a Last.fm internet radio tuner, a *MythTV* player and a web browser.

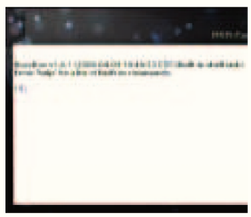
Thanks to the recent transition to *Qt*, applications are relatively easy to write and deploy. This makes it the perfect platform for anyone with a hankering for tinkering – or who just wants to listen to music. LXF

Features at a glance



YouTube

Neuros is a great platform for full-screen, high-quality YouTube playback – without touching a web browser.



Command line

Want to access a command line from your TV remote? Well, here's your chance. Or Telnet to the Neuros instead.

LINUX FORMAT Verdict

Neuros OSD

Developer: Neuros Technology
Web: www.neurostechnology.com
www.techradar.com/329144
Price: £139.99/$179.99

Features	10/10
Performance	8/10
Ease of use	7/10
Value for money	9/10

» *Cheap enough for an impulse buy, but there's enough technology to play with in the Neuros to last you for years.*

Rating 9/10

CrossOver Games 7.0

Codeweavers' *CrossOver* is no longer a prosaic office productivity enhancer. **Graham Morrison** looks at the first release designed to play games.

In brief...

» Play Windows games in Linux without a Windows licence. Alternatives include *Cedega* and wrestle with a *Wine* installation.

Our test machine

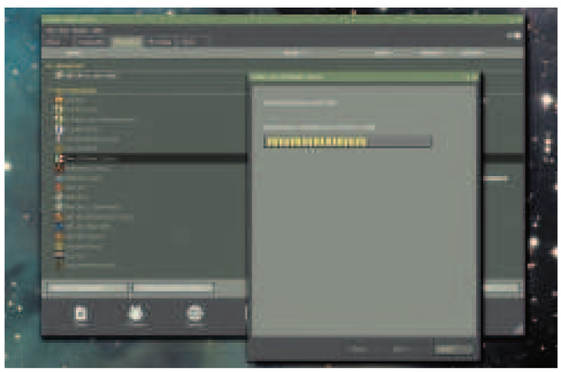
» AMD Athlon 64 X2 5000+
» 1GB RAM
» Nvidia 7600GS 256MB RAM (PCIe)

CrossOver Games is a direct competitor to TransGaming's *Cedega*, which we last looked at in **LXF94**. Both are designed to help Linux gamers get a taste of the latest Windows games, and both are based on *Wine*, the open source Windows emulation layer that isn't an emulator.

Games are something of a departure for the *CrossOver* brand, which until now focused on getting mainstream Windows applications like *Microsoft Office* and *Adobe Photoshop* running on Linux. Recent versions even brought the same functionality to Apple's OS X. But there has been a long delay in building a version compatible with Microsoft's latest *Office 7*, and Jeremy White – the CEO of CodeWeavers – will only release *CrossOver Linux 7* when *Microsoft Office 2007* works. In the interim, *Wine* developers have been making great progress in games compatibility, and this has enabled *Codeweavers* to come up with a new version of *CrossOver* designed specifically to cater for gamers without the constraints of an *Office* compatible release cycle and all its associated stability testing.

Binary packages are available for Red Hat, Mandriva, OpenSUSE, Debian and Ubuntu, with 64-bit versions available for Debian and Ubuntu. There's also a generic package that you can use if your distro doesn't match any of the above, and installation is painless. *CrossOver Games* will work in demo mode, providing seven days of full functionality before you need to buy a licence online and authenticate your installation. This is a good way to ensure that any game you want to play works before you part with your credits. As with *CrossOver Linux*, Windows software is installed through a configuration window. First select the game you want to install from a list, before moving on to the game's standard installation mechanism. In the case of the online games distribution system, Steam, *CrossOver* automatically downloads the necessary Windows and Steam components, launches the Steam config panel and adds each Steam game you install to the *CrossOver Games* menu.

› ***CrossOver Games*** **is improving all the time, and uses the latest cutting-edge versions of *Wine* for maximum games compatibility.**



› **Steam games, in particular those published by Valve, are the highlight of *Crossover Games*.**

Head of steam

The biggest problem with *CrossOver* is that relatively few games are compatible. As of writing, only 26 games are listed as 'Silver' in the official compatibility table. *Cedega* has dozens more. Where *CrossOver* lists *Grand Theft Auto 2* (from 1999) as usable, *Cedega* lists *Grand Theft Auto 3* (2004) with a similar status. *Cedega* plays both *Oblivion* and *Battlefield 2142* too. But *CrossOver* has one serious gaming advantage: Valve's games on Steam. The fantastic *Team Fortress 2* and the genre defining *Half Life 2: Episodes 1 & 2* both work, though you'll need to purchase the download versions rather than a box in your local games store.

Steam games are seamlessly integrated into your desktop environment, and we found they performed a few shades faster than on *Cedega*. On our test box, we averaged around 36 FPS on *Day of Defeat Source* running at 1024x768 with HDR enabled, and only around 29 FPS in *Cedega*. But *CrossOver* doesn't do anti-aliasing, which makes a big difference in image quality (the developers are working on this).

You might think that all this means choosing between *Cedega* and *CrossOver Games* is as simple as choosing the platform that supports the games you want to play. This is true, but there's an added dimension relevant to most Linux users. Codeweavers actively helps and encourage the development of *Wine*, giving many of its changes back. *TransGaming* does not. This means that choosing between them is a combination of software and ethics – so vote with your wallet. LXF

LINUX FORMAT Verdict

CrossOver Games

Developer: Codeweavers
Web: www.codeweavers.com
www.techradar.com/329196
Price: £25.99

Features	8/10
Performance	7/10
Ease of use	9/10
Value for money	9/10

» *As long as the games you want are supported, this is highly recommended.*

Rating 8/10

LUGRADIO LIVE UK08

JULY 19TH - 20TH

LugRadio Live UK 2008, the UK incarnation of the Open Source, digital rights, technology and free culture conference brings 35+ speakers, 20+ exhibitors, a stack of fun special events, evening parties, and all wrapped up in a unique Rock Conference style atmosphere.

This is all brought to you by the presenters and community of the cult-hit LugRadio podcast.

Believe us when we say that this is nothing like you have seen before.

Oh, and because its by the community, for the community, its a lot of fun, and only a fiver to get in too...

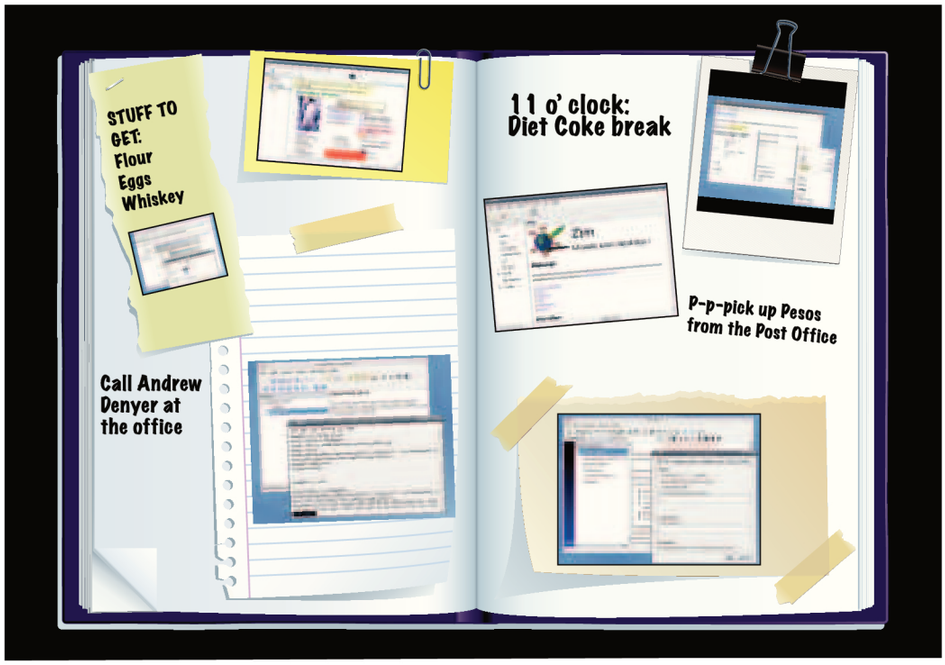
WOLVERHAMPTON UNIVERSITY
STUDENT UNION
WULFRUNA STREET
WOLVERHAMPTON

Roundup

» Every month we compare tons of software so you don't have to!

Note takers

Suffering from information overload? **Mike Saunders** explores six note taking tools to combat the buildup of random scribbled notes on your desk...



How we tested...

Note takers have to straddle a fine line: too many features and they become cumbersome to use, too few features and they're barely worth more than a plain text editor. Developers have to ensure that the interface isn't cluttered with gizmos, otherwise we end-users feel like we're at the control deck of a Boeing 747. We considered:

» **Desktop integration** Does the app work with Gnome, KDE or *Xfce*? Can you drag text or pictures into a note?

» **Import/export** Can you grab data from another note-taking program? Can you generate a pretty HTML version of your jottings?

» **Encryption** If you're storing passwords and PIN numbers, you don't want the data to be easily accessible. The program should encrypt your data when it's stored on disk, and prompt you for a password.

Our selection

Paper – don't you just hate it? We live in the 'information age', and yet the much promised era of the paperless office still seems decades away. Our desks are cluttered with notes, reminders and scraps of random information that desperately need to be sorted, but it's hard to find the time. You've probably tried the brute-force method of computerising your notes: keeping a plain text file (or word processor document) on your desktop, ready at hand to tap in phone numbers, reminders and other tidbits that you need to store in a hurry.

This system works fairly well at first, but it soon becomes unwieldy. As much as you try to keep notes together in categories and purge expired information when necessary, eventually you end up with a morass of data that's impossibly hard to manage. Sure, it's a slightly better system than playing 'hunt the Post-It Note', and it certainly saves on trees, but there has to be a more elegant solution.

Jot it down

Note-taking programs aim to help you organise your information in a clear and accessible way. Typically, they let you assign snippets of information to one or more categories, making it easy to browse through and search your notes. Good note takers don't focus on any specific type of information – they let you enter anything from URLs and upcoming appointments to train times and the name of a song you just heard on the radio. Some features are essential, such as searching and copying text, while formatting (bold, italics) is useful to have for structuring information.

Here in Linuxland we're lucky to have a selection of note takers to try out. The open source community has been grafting away on a variety of utilities to help organise your life, from feature-laden programs with powerful import/export facilities to light and simple tools that do little more than accept data. Over the next few pages we'll examine six of the most prominent note takers, helping you find the right program for your home and/or office.

Tomboy

Flagship Mono app with Gnome-ish simplicity.

Tomboy, along with *Banshee* and *F-Spot*, is one of the most prominent applications to be written with C#/Mono. Its lowly 0.10.0 version number suggests immaturity, but *Tomboy* is close to a 1.0 release in terms of overall stability. Its performance suffers from the use of Mono, though: startup times are elongated as the program pulls in various Mono runtime libraries. If you regularly run other Mono programs on your desktop this isn't a big deal, as you'll normally have the relevant libraries already loaded into RAM. But if you tend to run a Mono-free system, you may find the lag in startup (ten seconds on our test machine) annoying when you want to tap something in quickly (eg when you're on the phone).

With a *GTK#* interface, *Tomboy* is most suited to the Gnome and *Xfce* desktops, although it will happily run in KDE too. If your desktop or window manager has a system tray section, *Tomboy* will deposit an icon there when it starts, providing right-click access to online help and the preferences dialog. The program's interface is almost alarmingly minimal: there's no menu bar, no side panels, nothing leaping out at you to be clicked. Indeed, this can catch you out at first – how do I make some text bold? How do I create a new note?

All in context

The answers lie in the right-click context menu, and the system tray icon. Herein lies one of the problems characteristic of many Gnome programs: lack of interface customisation. Yes, *Tomboy* is simple and doesn't addle your brain with widgets all over the place. But some extra toolbar buttons wouldn't go amiss, so that you could, for instance, make text bold without having to go through a menu. It's a shame that *Tomboy* doesn't let you tweak the interface to your liking, but still, there are plenty of keybindings to learn them.

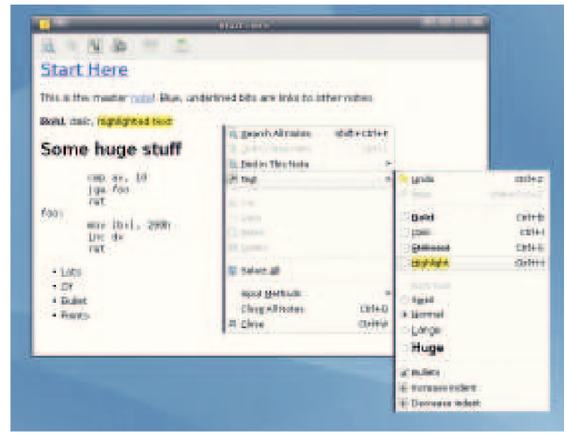
For text formatting, *Tomboy* provides the usual bold, italic and underline facilities, plus a monospaced font (good for code fragments), four font sizes and bullet points. This formatting is adequately preserved in the HTML export facility, but here's where another problem rears its ugly head: you can only export individual notes. So, if you have a master note containing links to other notes, and want to generate a web page version, you have to go through every single note and export it, then fix the links in the HTML. This happens despite an 'Export linked notes' option in the export dialog, and is very shoddy – sure, *Tomboy* is only at 0.10.0, but it makes the feature effectively useless.

Naming nonsense

The notes themselves are stored as XML files, with memorable filenames such as this: **10960f09-9977-428c-8f5a-6c3afb5df5a4.note**. We don't have a beef with the program's use of XML, but if you need to access your note data on another machine and don't have *Tomboy* to hand, you'll find it frustrating to pore through lots of randomly named files. There's also no facility to import notes, so if you want to transfer information from another note-taking program, you'll have to copy and paste. *Tomboy* handles dragging and dropping of text adequately well – it preserves basic formatting of web pages when a selection is dragged from *Firefox*.

The program uses 'Notebooks' as a category system. You can create and name new notebooks, then assign individual notes to them, although you can't assign a single note to multiple notebooks. There's no facility to encrypt your notes or protect them with a password. On the minor features front, you can synchronise your notes to a remote server with WebDav, customise the hotkeys used to open your notes, and enable a wiki-like mode so that WordsWithoutSpaces, for instance, will turn into a clickable link for a new note.

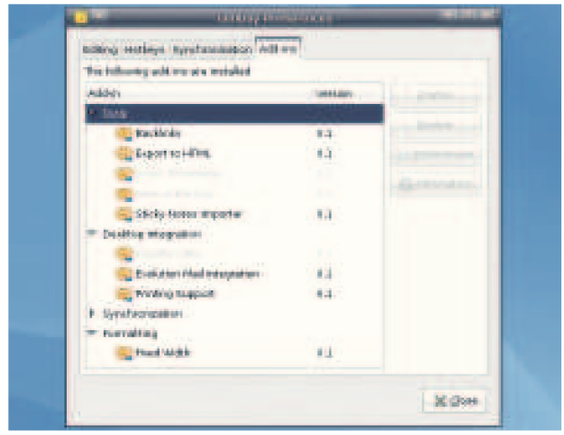
> **"While Tomboy is stable overall, it feels uncared for in some areas."**



› ***Tomboy*'s text formatting options are available via a menu, but we'd rather have the common options (eg bold and font sizes) clickable in the toolbar.**

Tomboy can be expanded via 'Add-ins', a few of which are supplied for the aforementioned HTML export and WebDav facilities. There are also Add-ins to integrate with *Evolution* – you can drag an email into a note, and it will create a link in *Tomboy* based on the subject line – and provide Sticky Notes importing. The latter, however, is supposed to present a new option in the Tools menu according to the documentation, but it doesn't actually do that, so it's unusable.

It's these little glitches that hold *Tomboy* back: we can understand the developers wanting to skimp on certain features in order to keep the program easy to use (although more import options would be good). But various bits are half-finished or broken, and while the app is stable as a whole, it feels uncared for in some areas.



› **An 'Add-ins' plugin system makes it easy to enhance the basic *Tomboy* application with further functionality.**

LINUX FORMAT Verdict

Tomboy

Version: 0.10.0
Web: www.gnome.org/projects/tomboy
Price: Free under LGPL

» *A promising tool, let down by a couple of broken features and a lack of interface customisation.*

Rating 6/10

KnowIt

A KDE app that deserves to start with a K!

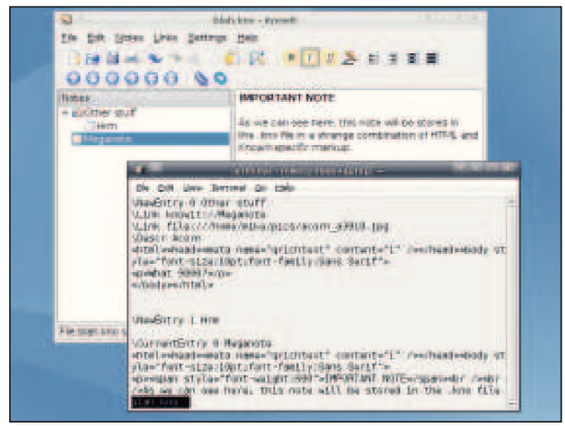
Everyone gets tired of the obsessive use of Ks in KDE program names, but in the case of *KnowIt*, at least it makes sense. *KnowIt* is a note taker designed for KDE 3, and hasn't seen much development in the last few years – the most recent version, 0.10, was released in March 2004. However, the program still works well and deserves a place in this Roundup. *KnowIt* starts up with a familiar KDE tips box, highlighting various features and keyboard shortcuts that you can use.

The interface is chock full of buttons to play with, but creating a new note isn't very intuitive: you can click on the New button in the toolbar all you want, and nothing will happen. Instead, you need to click Notes > Add and give the new note a title.

So *KnowIt* doesn't get off to a great start in terms of user-friendliness, but once you've got to grips with the basics, it's smooth running. *KnowIt* supports basic text formatting options (bold, italics, font colours, alignment), and lets you add links to notes – that is, clickable text fields that redirect you to other notes or files on your machine. The program's greatest strength, however, lies in its sorting facilities: using the pane on the left-hand side, you can rearrange the order of notes and even create sub-notes. This makes it easy as pie to build up master notes for different topics, and then create child notes with specific bits of info.

A basic HTML export facility is included, and, curiously, *KnowIt* saves its files in a rather cool combination of home-brewed markup and HTML (see the screenshot). However, there's currently no way to import notes from other programs, nor any facility to encrypt your data. On the upside, *KnowIt* can easily drag and drop text from other KDE applications, without having to perform the usual copy and paste chicanery. It's not a bad program, just falling behind the times now.

"KnowIt can easily drag and drop text from other KDE applications."



The panel on the left lets you shift notes around and create sub-notes in a tree-like format.

LINUX FORMAT Verdict

KnowIt

Version: 0.10
Web: http://knowit.sourceforge.net
Price: Free under GPL

It's dated and doesn't have much in the way of features, but is otherwise very pleasant and effective in use.

Rating 7/10

NoteCase

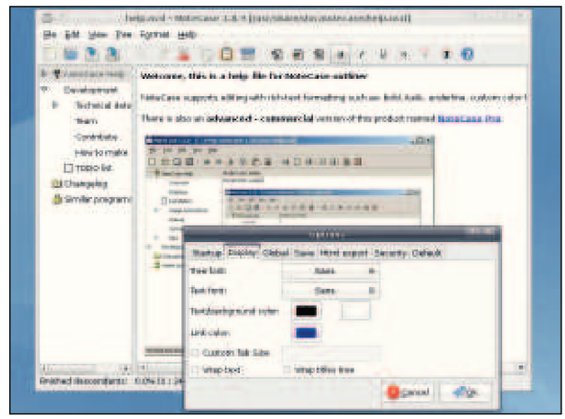
Making the most of smaller screens.

If you hop over to *NoteCase*'s website, you'll see plenty of screenshots of the program running on low-resolution displays, such as the Sharp Zaurus and Maemo platforms. And indeed, the interface is fairly compact, with a menu bar and single toolbar making up the primary GUI elements. Like *KnowIt*, *NoteCase* uses a two-pane display, with the left-hand pane containing note titles. You can click and drag these around with the mouse to reorganise them, and create sub-notes in an expandable tree list. Throughout the program, *NoteCase* uses the term 'node' to represent what we think of as a note, but it doesn't get confusing.

NoteCase does very well on the feature front: it has text formatting, inline pictures, a word count, and the ability to run in read-only mode (so that you don't accidentally delete data). Excellently, there is a vast range of options – you can reconfigure the keybindings and fine-tune the application's startup, display, backup and HTML export facilities. *NoteCase* can read and write files in a variety of formats, including *Gjots*, *Sticky Notes* and *FreeMind* .mm files, and also has a password option that generates encrypted files.

A particularly useful feature is *NoteCases* 'finished nodes' flag. When you don't need a note any longer, you can simply mark it as 'finished', and do the same for other unneeded notes. Then you can purge the lot in one fell swoop. *NoteCase* can even clone its own executable binary and attach your current document, so you can send your notes, coupled with the program, to a friend or colleague; they won't have to install it themselves. On the whole, *NoteCase* is an excellent tool with all the essential features intact and a few extra gems thrown in for good measure.

"NoteCase is an excellent tool with all the essential features and a few extra."



As a demonstration of *NoteCase*'s capabilities, the program's documentation is supplied as a complex *NoteCase* file.

LINUX FORMAT Verdict

NoteCase

Version: 1.8.4
Web: http://notecase.sourceforge.net
Price: Free under BSD licence

The best GTK-based note taking tool around: mature, feature-laden and very snappy in use.

Rating 8/10

Basket

More like a truck with all the goodies in here...

KDE is better than Gnome, right? Only kidding – we're not going to start that war here (hence why *Xfce* was used as our main testing desktop). However, the biggest fuel for the whole KDE vs Gnome debate is the old 'number of features' metric: in general, Gnome apps tend to strive for simplicity and minimal GUIs at the expense of including every feature under the sun, as we've seen in *Tomboy*. Over in the KDE camp, however, features, checkboxes, gizmos and widgets galore are the order of the day. Just compare *Konqueror* and *Epiphany* as an example.

Basket is a KDE program, and consequently is a total featurefest, with so many buttons to click that you'll wear out your mouse within a few hours of use. But as we mentioned at the start of this roundup, features alone aren't necessarily a good thing – especially if the program looks more complicated than String Theory. *Basket* has by far the busiest interface of all the programs on test here; you have a menu, toolbar, note navigation pane, filter box, tags list, and the note content itself. On top of this, you'll also see smooth animations as bits of notes slide gracefully into place.

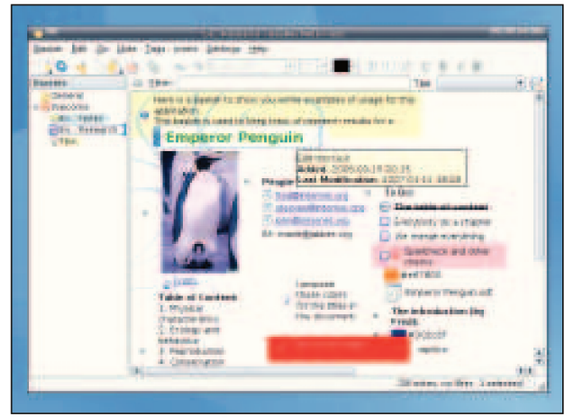
In *Basket* parlance, an individual basket is a combination of notes, typically with one master document and then a bunch of sub-notes beneath. This is much the same as in *KnowIt* and *NoteCase*, but *Basket* expands the concept further: in the main pane of a note (the panel on the right-hand side), you can click anywhere to start adding text in little boxes. Once you've built up various text snippets, you can click-drag over them to group them together. This provides more control over the hierarchy of your notes than any other program on test – it takes a while to master, but is ultimately very powerful.

You're not limited to text though: you can insert images, web links, checkboxes (for to-do lists) and program launchers. With a bit of work, you can turn *Basket* into a launchpad for your life: you have notes, reminders, links and applications all in one place. Every bit of info in a *Basket* note page, be it text or image, is resizable and movable, much like in a DTP program. Functionality wise, this is way beyond any of the other programs on test here – it's gigantically versatile.

Hey, good lookin'

The animation effects as you move snippets around is purely a cosmetic touch, and it also comes into play when you're searching. Using the filter bar at the top, you can enter text to narrow down the snippets on a note page, with irrelevant information fading out of view. Yes, it's a frill, but it underscores the level of attention that has gone into *Basket*. For any bit of info, you can assign pre-created tags (eg low priority, work, personal), or create your own tags with custom images and colours.

Basket's HTML export facility is hugely impressive, creating a page (with images) that's almost identical in pixel-perfect layout to the original document. The program can import files from a wide range of alternatives, including *KNotes*, *KJots*, *KnowIt*, *TuxCards* and *Tomboy*, and you can secure notes with a password (it even tells you how strong your password is). The desktop integration is solid – *Basket* adds an icon to the system tray, and you can drag and drop pictures from *Konqueror* straight into your notes.



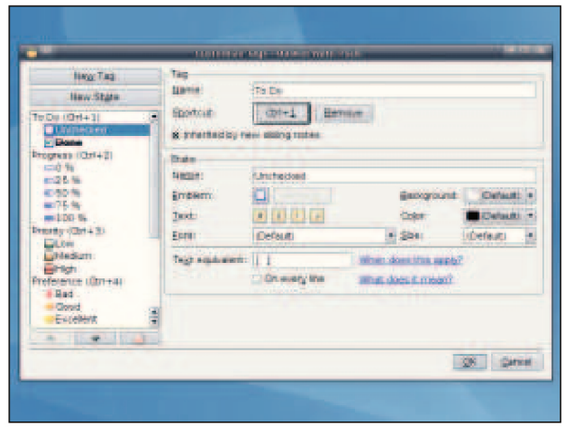
› ***Basket* gives you complete freedom to lay out your notes in the style of a more powerful DTP app, such as *Scribus*.**

Feature freak-out?

So the big question is this: is *Basket* too featureful for its own good? Well, in 95% of cases it isn't. The interface is very lively compared with most of the other apps on test here, but rarely do you feel forced into doing anything. For all the animation effects, categories, tags, colours, fonts, pictures and other elements that you can introduce to your notes, you can still stick with plain old text if it's all you need. Therein lies the hallmark of a great piece of software – it's flexible enough to keep both novices and power users happy. Some GUI pundits say that too much ability to customise an interface is a bad thing, leading to inconsistency; others argue that it makes a program far more flexible.

Of course, if you're a regular Gnome user and don't need all the bells and whistles, *NoteCase* is ideal for you – but otherwise, *Basket* is simply the best, most versatile and well cared-for note taker you can get on Linux.

> **"Basket is flexible enough to keep both novices and power users happy."**



› ***Basket*'s tagging feature is extremely powerful – here's the dialog box for creating and customising tags.**

Tagtastic

A vast range of pre-defined tags are supplied with *Basket*, so you can mark a particular note as, say, 25% complete or just plain funny. But a tag is also like a template: you can make a tag affect the formatting of a note snippet, so, for instance, you could set up an 'urgent' tag which makes any associated text big, red and bold. You can even assign keybindings to tags, so that you can mark snippets quickly. Most of us are unlikely to need more than five or so tags, but the huge flexibility of Basket's tag implementation bumps up its score in this roundup.

LINUX FORMAT Verdict

Basket

Version: 1.0.2
Web: http://basket.kde.org
Price: Free under GPL

» *Packed with clever touches and features,* Basket *has everything you could want in a note-taking tool.*

Rating 9/10

TuxCards

'The notebook for Tuxfreaks', apparently.

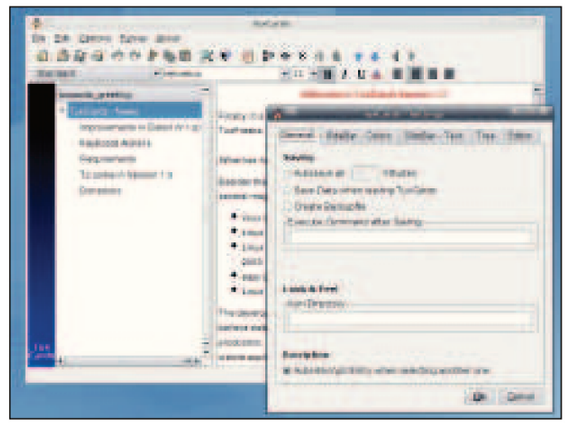
Anything that references our favourite penguin mascot instantly wins one thumb up from us. However, the other thumb is remaining firmly lowered until we see what *TuxCards* has to offer. On the plus side, it's supplied as a statically linked binary (all library dependencies included), so it will run on nigh-on every Linux distribution you can name. On the downside, it looks sorely bare compared to the other programs in this roundup.

TuxCards adopts the two-pane display used by many other programs in this test, with the left-hand pane containing the names of note entries, and the right containing the note text itself. Via the left panel you can organise notes in a tree structure – creating sub-notes and dragging them around. Basic text formatting options are available for the notes (font style, size, paragraph alignment etc), but you can't insert images nor drag files to create inline pictures or links. If you drag over a file from *Konqueror*, you'll just see **file://<filename>** in plain text.

There's no import facility, although HTML export is included, and *TuxCards* stores its data in a fairly readable XML flavour. Password-based encryption is provided; it doesn't encrypt the entire data file, but instead encrypts the text for a note, placing it in a CDATA section in the XML file. This is quite useful – you can encrypt sensitive parts of your notes without rendering the whole file unreadable if you need to poke around it using a text editor.

TuxCards is very primitive compared with the likes of *NoteCase* and *Basket*, and aside from the per-note encryption system, there's no reason to use it over any other app (though it is impressively fast). *TuxCards* is a fairly old app now, having not seen much development since 2004 – it's not a disaster, just falling behind as its contemporaries grow.

"TuxCards adopts the two-pane display used by many other programs."



TuxCards is so-so as far as customisation options go, but has very little to offer when it comes to features.

LINUX FORMAT Verdict

TuxCards

Version: 1.2
Web: www.tuxcards.de
Price: Free under GPL

As basic as it gets – TuxCards *isn't a bad program, but it needs some updates to keep pace with the competition.*

Rating **4/10**

Zim

It's a wiki... but on your desktop!

We've been following *Zim* for a while, first looking at the *Perl-GTK* program back in **LXF81**'s HotPicks. At the time, *Zim* was something of a novelty, aiming to bring wiki-like editing features to a desktop app. In particular, it introduced the idea of note pages being created on the fly – you write some text, select a bit of it, and turn the highlighted part into a link to a new page. We were impressed, finding that the wiki approach to information management worked well in note taking.

However, most of the other note takers on test here have the same features now, so *Zim* isn't such a rarity. It's still a decent little tool though: you can get editing straight away with basic text formatting facilities, selecting a word or two with the mouse and clicking the link toolbar button to create a new page. *Zim*'s best feature is its storage format, which isn't some contrived XML dialect or unreadable binary blob. Instead, *Zim* stores your notes in a wiki-like format, so if you have some bold text, for instance, it is stored as '**these words are bold words**'. This makes it fairly easy to move your notes around different programs, or just edit them in a plain text editor if necessary. But otherwise, *Zim* has little else to impress.

You can export your notes in HTML format, but there are no import filters for other programs, nor any facility to encrypt and/or password protect your data. Still, it's more than adequate for simple note taking, and you can drop files and images into your notes to produce links or inline images.

If all you need is mostly plain text notes, linked together without any kind of category system or hierarchy, *Zim* is the ideal small and sweet tool – just don't expect anything more.

"Zim is the ideal small and sweet tool – just don't expect anything more."

***Zim*'s extensive online documentation is provided in *Zim* format to demonstrate the program's capabilities.**

LINUX FORMAT Verdict

Zim

Version: 0.23
Web: http://pardus-larus.student.utwente.nl/~pardus/projects/zim

Light on features and light on RAM; Zim *can't compete with the big boys but has the basics covered very competently.*

Rating **7/10**

Note takers

The verdict

Basket 9/10

From the start, it looked like this would be a two-horse race between *Tomboy* and *Basket*. The former is one of the most celebrated Mono programs (which is why we spent a full page looking at it), and although we've been keeping track of it over the years, we were surprised at just how poorly it fared against today's KDE competition. Now, before we're deluged with flame emails, yes, we appreciate that *Tomboy*'s version number is a mere 0.10.0. We're not having a dig at it for a lack of features – what does annoy us, however, is when a feature has supposedly been implemented but only works dodgily, if at all. We have no doubt that *Tomboy* will be a great program at 1.0, but for now, it still has some way to go.

> **"If you want features to cover your every need, install Basket pronto and you won't be disappointed."**

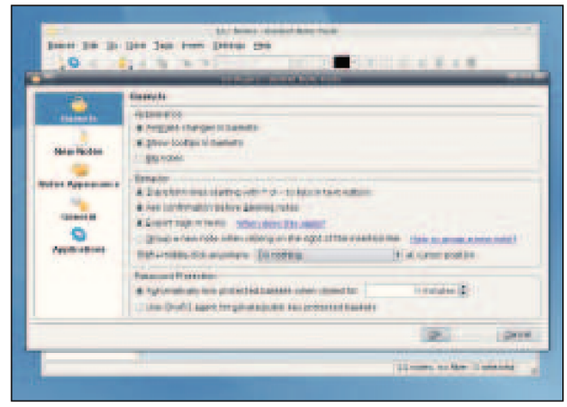
So *Tomboy* fell at an early hurdle, giving chance for *NoteCase* to catch up and race alongside *Basket*. *NoteCase* is a fantastic app: it has a top selection of features, fits in nicely with Gnome and *Xfce*, and showed no signs of stability problems in our testing (including pasting masses of random data into the notes).

There can be only one

However, *NoteCase* doesn't quite have parity with *Basket* when it comes to an all-out feature showdown. *Basket*'s ability to lay out notes with pixel-perfect precision, much like we do with real scraps of paper, coupled with its tagging system makes it a nearly unbeatable program for note taking. Its interface could be tidied up in some areas, which holds it back from winning a 10/10 score, but perhaps this is something that can be rectified if the development team makes a KDE 4-specific version.

When all is considered, the bottom line is this: if you want the best note taker, with squillions of features to cover your every need, install *Basket* pronto and you won't be disappointed. As a KDE app it looks slightly out of place in Gnome or *Xfce*, but the trade-off is worth it – you'll love its flexibility. However, if some of *Basket*'s features seem like overkill to you, and you're a regular Gnome or *Xfce* user, try *NoteCase*. Even though it's a smidgen behind *Basket* on the feature front, it's still very versatile and has a pleasingly svelte interface.

Overall it's a good showing from the open source community: whatever desktop you use, and however many features you want at hand, there's something here that will do a sterling job. Here's looking forward to a KDE 4 version of *Basket*, and some improvements from the *Tomboy* camp. LXF



› ***Basket*'s superb featureset, attractive cosmetic touches and extensive tweakability win it the top spot in this test.**

Over to you

Have you come across a better note-taking app? Do you think *NoteCase* is for nutcases, or *Basket* is riddled with KDE-style featuritis? Will you never be able to give up good old pen and paper? We always love hearing your thoughts – get in touch at **lxf.letters@futurenet.co.uk** or join in the chat on our forums at **www.linuxformat.co.uk/forums**.

Table of features

Name	Version	Executable size	Startup time[1]	RAM usage	System tray icon	Import[2]	Inline images	Encryption
Basket	1.0.2	45k	7 secs	18MB	✔	7	✔	✔
KnowIt	0.10	238k	5 secs	16MB	✘	0	✘	✘
NoteCase	1.8.4	1.1MB	2 secs	15MB	✔ (optional)	4	✔	✔
Tomboy	0.10.0	318k	10 secs	35MB	✔	0	✘	✘
TuxCards	1.2	723k	4 secs	13MB	✘	0	✘	✔
Zim	0.23	7.9k	3 secs	27MB	✔ (plugin)	0	✔	✘

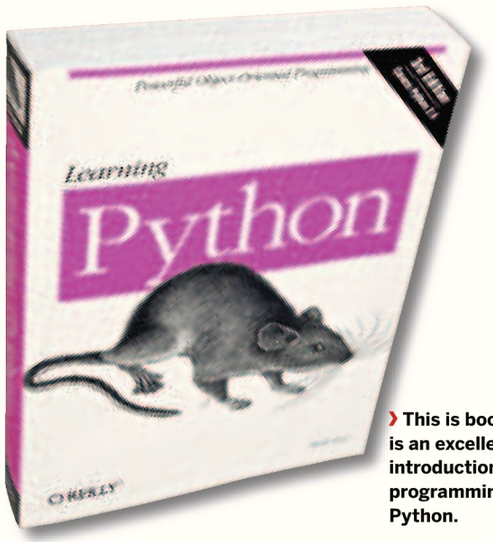
[1] Cold (non-RAM-cached) startup in *Xfce*, with no Gnome or KDE libraries loaded, so as not to bias performance towards those desktops
[2] How many file formats the program can import, aside from its own native format

All programs were tested on a 1.6GHz Celeron M machine with 1GB RAM, running Xubuntu 7.10

Learning Python, 3rd Edition

A third edition needs a USP. **Andy Hudson** gets out his magnifying glass.

As many of you are no doubt aware, the O'Reilly folks pride themselves on their coverage of a wide range of topics. Not only that, but you're able to pick and choose from different levels of books giving you multiple entry points into the subject of your choice. Python is certainly not unique in this respect, and it is good that the third edition of *Learning Python* was recently published, updating the content for Python 2.5 and helping to draw new converts to this popular programming language. Based on the author's extensive experience in providing Python training courses over the last eleven years, *Learning Python* gives you an excellent grounding in the subject from its 680 pages of content.



This is book is an excellent introduction to programming with Python.

Forgoing the usual history and background chapter, the author spends quite a few pages selling Python to the reader; a curious angle to take, given that they've already made the decision to use Python. Nonetheless, the reader gets a good understanding of what Python is actually good at as well as some of things that count against it. Moving on through the book you'll get a rapidly accelerating level of difficulty, and it wouldn't be far wrong of us to say that this book might be all you need.

Because the content is so geared to Python and its nuances, it would be hard to gain any general understanding of programming from this book. Instead, it's mission is focused solely on teaching the reader how to program using Python, one that it succeeds in. The author also includes some end-of-chapter questions to ensure that you're taking the material in. It's been a while since the last edition, but the wait was worth it. LXF

LINUX FORMAT Verdict

Learning Python, 3rd Edition

Author: Mark Lutz
Publisher: O'Reilly
ISBN: 978-0-596-51398-6
Price: £24.99
Pages: 680

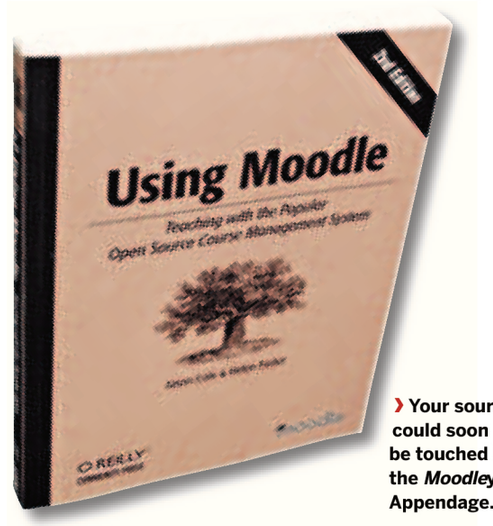
» *If you're looking to pick up Python programming, this book should definitely be on your shopping list.*

Rating **9/10**

Using Moodle

Andy Hudson reminisces about the time he hacked his school network.

Those of you who've never heard of *Moodle* are in for a treat – especially if you work in a school, college or university. *Moodle* is an open source course management system that enables you to more quickly and effectively manage the delivery of course and supplementary aides. It's actually quite good, and now O'Reilly has decided to support the *Moodle* community by releasing the *Moodle* documentation as part of its Community Press range. Although most of this content is available online free of charge, users will no doubt appreciate having a book that they can make notes on and reach for in times of need – which is what *Using Moodle* is.



Your sources could soon be touched by the *Moodley* Appendage.

This book gives a broad tutorial on pretty much all of *Moodle*'s parts, enabling you to quickly and easily set up classes, courses, quizzes and other collaboration tools such as Wikis and forums, allowing your end users to work together on the same topics and lessons.

At no point are you left scratching your head, as both authors work at a steady pace throughout. You'll see points where one of the authors adds their comments to a chapter that the other has written, usually to add an alternative viewpoint or a real-life scenario that is relevant to the topic being discussed. This kind of interaction adds to the value of the book and serves to emphasise the topic.

If you're looking for a book on *Moodle*, *Using Moodle* is really your only choice. It's fortunate that the book itself comes from the *Moodle* project, and before long you'll be using it to build an entire course delivery system. Our only complaint is the lack of installation instructions – you're left to your own devices if you want to get the system up and running. LXF

LINUX FORMAT Verdict

Using Moodle

Author: Jason Cole & Helen Foster
Publisher: O'Reilly
ISBN: 978-0-596-52918-5
Price: £24.99
Pages: 254

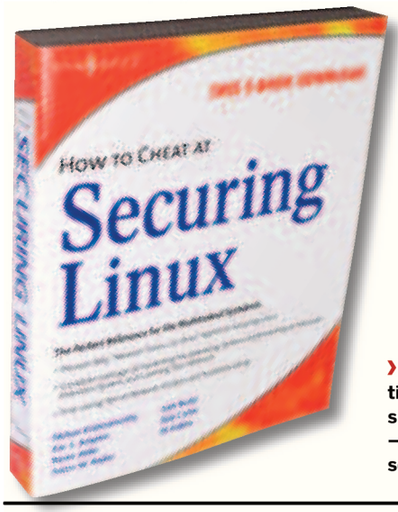
» *Useful introduction to a powerful online system for learning.*

Rating **9/10**

How to Cheat at Securing Linux

How to cheat your insomnia, more like. **Paul Hudson** takes 40 winks...

Security isn't a very interesting topic. That's not to say it's unimportant or not worth learning; just that you have to really work hard to make it come across in a lively, engaging and original way. But if you don't try any of those things, what you end up with is something that's only informative if you munch caffeine pills at the speed of Pac-Man to keep you awake. *How to Cheat at Securing Linux* isn't very interesting. Nor is it funny, and nor is it original. It is, however, full of flowcharts with titles such as "Diagram of the DES Encryption Algorithm."



› **Despite the title, there are no shortcuts inside – just a long, hard security slog.**

When I volunteered to read this book, I thought "great! This book is about learning security by cheating, which means I get to skip the theory and focus on getting stuff done." Sadly that wasn't the case: this book is theory overload, with actual practical tips few and far between.

If you want to dip in and dip out, it's not so bad – *How to Cheat...* has a wide spectrum of coverage, including IDSs, firewalls, packet sniffing, encryption, DMZs and more. So you do get a lot of value for money, but you really do need to tackle the topics in bite-size chunks, because there is little attempt to bring any spark of fun or interest into the text.

Once you dispense with the theory about how things like Diffie-Hellman public key exchange works, this is largely a book about intrusion detection and packet sniffing. It's presented like a man page, yes, but it's at least comprehensive and factually correct – one for people who bought *Linux Security for Dummies* and are eager to balance their bookshelf. LXF

LINUX FORMAT Verdict

How to Cheat at Securing Linux

Author: Mohan Krishnamurthy *et al*
Publisher: Syngress
ISBN: 978-1-59749-207-2
Price: £27.99
Pages: 416

» *Drier than a glass of Extra Brut in the Sahara, and doesn't fight hard enough to justify its place on your bookshelf.*

Rating 6/10

Distrowatch

This month's roundup of news from the dungeons of Linux distro development.

LADISLAV BODNAR
is a founder, maintainer, editor and janitor of DistroWatch.com.

Stability vs novelty

What will be your distribution of choice in the first half of 2008? In the absence of any real breakthrough features, a lot could depend on your personality. Do you prefer a well-tested, stable OS with minimum post-release updates? Or do you enjoy the latest and greatest technologies, even if they may cause loss of productivity from time to time?

Of the top four desktop distros, there's a noticeable distinction between the two groups. Mandriva and Ubuntu have opted for a more conservative approach in their package selection for Mandriva 2008.1 and Ubuntu 8.04 and, although both offer KDE 4.0 as an optional extra, they're more concerned with package stability and trouble-free operation than delivering the latest, but potentially troublesome, software.

New development

Not so Fedora and OpenSUSE. Both these distributions have now switched their default KDE desktops to version 4.0, and OpenSUSE has also redesigned its installer and setup tool with an updated *Qt* toolkit. Of course, Gnome remains Fedora's default desktop, but with the recent initiatives to make KDE an equal player in the distro, the complete omission of KDE 3.5 from Fedora 9 is surprising. One advantage OpenSUSE has over Fedora is the extended development period, as OpenSUSE 11.0 isn't scheduled for release until the middle of June, some one and a half months after Fedora 9.

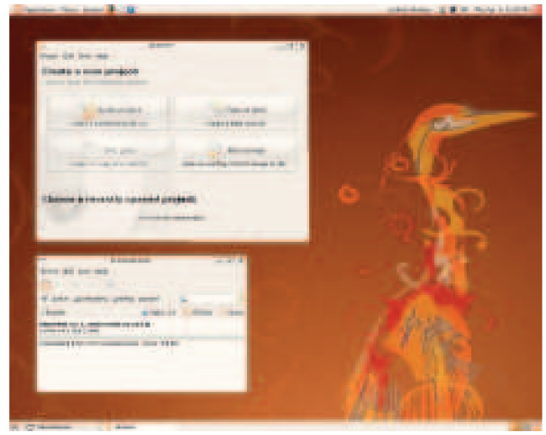
If your priority is stability and a well-tested set of applications, choose Mandriva 2008.1 or Ubuntu 8.04. But if you must have the latest technologies, then Fedora 9, and especially OpenSUSE 11.0, are better options.

ladislav.bodnar@futurenet.co.uk

Hardy Heron

Ubuntu 8.04 LTS – virtualisation, Gnome 2.22, new default applications, Wubi installer and more

Ubuntu continued its determined march towards Linux desktop and server dominance with the release of version 8.04 at the end of April. This was the second time the product bore the LTS badge behind its version number. Ubuntu's second Long-Term Support release means that "Hardy Heron" (the code name of version 8.04) will be supported with security and bugfix updates until April 2011 on desktops and until April 2013 on servers. So does the new Ubuntu make a good system to deploy on office desktops and corporate servers?



Ubuntu's Hardy Heron has its eyes on the business market, but 8.04 also has plenty of new features for home users.

Although the release notes highlight some of the new desktop features, a closer examination reveals that Canonical has been focusing its attention on enhancing the server edition of the product. After all, this is where the company is most likely to generate some revenue by selling support in a fashion similar to Red Hat's business model. With a well-established product and a promise of long-term maintenance, it should be able to attract a lot more customers than it did with its previous LTS release, version 6.06, two years ago.

Virtualisation, ActiveDirectory integration, iSCSI support and memory protection mechanisms are the main new additions to Ubuntu 8.04 Server. The virtualisation comes courtesy of Kernel-based Virtual Machine (KVM) and includes the graphical management application *Virtual Machine Manager*, developed by Red Hat. This is one of the most sought-after features by many high-end service providers, and Ubuntu 8.04 LTS is now well-positioned to offer solid competition to Red Hat and Novell in this arena.

> **"Canonical has focused its attention on enhancing the server edition."**

Those who deploy the new Ubuntu release on their desktops won't be disappointed either. Although 8.04 is primarily a stability release, users should find enough reasons to upgrade. These include the latest version of Gnome (2.22), up-to-date desktop software, interesting applications, and new artwork and polish. But the most exciting desktop feature is *Firefox 3.0* with Places, the browser's infrastructure for storing bookmarks, history and other information about web pages.

Ubuntu 8.04 also integrates *PulseAudio*, the increasingly popular audio server, plus *PolicyKit*, a tool for fine-grained control of program execution and access even for applications that normally require you to have superuser privileges. There's also *Vinagre*, a new VNC server that enables users to access and view multiple remote machines simultaneously. Another feature is the *Wubi* installer. Available on the Live CD as a Windows executable file, it provides a simple way of installing and uninstalling Ubuntu as if it were just another Windows application – without committing any hard disk resources and without touching the existing bootloader.

www.ubuntu.com

Online office

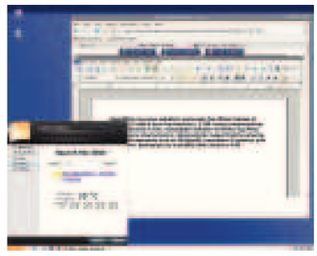
Ulteo Application System – create, edit and share documents seamlessly.

When Gaël Duval set out to develop Mandriva Linux back in 1998, he had an idea that turned out to be a winner. He took the most popular Linux distro at the time and made it easier to install and use by adding a graphical installer, a handful of configuration tools and a more intuitive desktop.

Ten years later, the Mandrake founder is up to something interesting once again. The idea this time is to make our files and data universally accessible – from anywhere in the world and irrespective of the operating system on the computer.

The first beta of Ulteo was released in late March. Although it's available as an installable Live CD, Ulteo shouldn't be seen as a new distribution that's here to compete with Mandriva or OpenSUSE – and it will definitely not appeal to operating system hobbyists who are expecting the latest technologies.

Instead, Ulteo focuses on online services and collaboration. In fact, it's not even necessary to install Ulteo on a computer in order to become an Ulteo user, as many of the project's services are already available to users of any Flash and Java-enabled web browsers.



› Any registered user of Ulteo services can create and edit *OpenOffice.org* documents online.

Nevertheless, Ulteo (the distribution) will make creating, editing, sharing and retrieving your documents – all of which are stored on a remote server – easier, particularly through its 'My Digital Life' tab in the Ulteo start panel and its auto-synchronisation features. The final version also promises to offer a secure encryption method for documents stored online.

With the momentum behind it growing, Ulteo has the potential to become a very exciting product.
www.ulteo.com

Small footprint

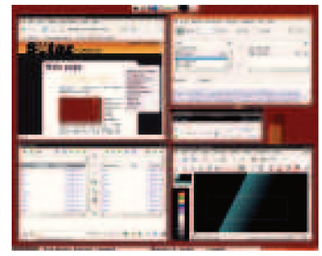
Slitaz GNU/Linux 1.0 – the world's smallest desktop Linux distro.

Living in a world in which system requirements grow with each new Windows or Mac OS release, it's refreshing to discover a project that doesn't expect us to buy additional memory or more powerful graphics cards.

On the contrary: Slitaz GNU/Linux, a new distribution that reached version 1.0 at the end of March, runs blazingly fast even on a machine that passed its prime many moons ago. As long as it has 128MB of RAM and a CD-ROM drive, you can still enjoy a full-featured desktop with a browser, multimedia and graphics applications, and a web server with integrated CGI and PHP support.

Slitaz GNU/Linux is a Live CD that loads itself into memory before launching the lightweight *JWM* window manager. In the menu there are two browsers (*Firefox* and *Retawq*), an audio player (*AlsaPlayer*), a CD ripping tool (*Asunder*), an image editor (*MTPaint*), FTP (*GFTP*) and BitTorrent (*Transmission*) clients, an email client and a PDF viewer.

If all that isn't enough, there's a lot more available for download via *Tazpkg*, the distribution's *APT*-like package manager.



› How many applications can you fit into 25MB? Quite a bunch, it would seem...

As is often the case with today's Linux Live CDs, Slitaz can be installed to a hard disk or USB storage device with a few mouse clicks. A command-line utility for remastering the Live CD is also included. Best of all, Slitaz 1.0 comes as a 25MB ISO image, so even dial-up users can download it reasonably fast.

But what really impresses about Slitaz GNU/Linux is that the developers have managed to fit so much functionality into such a small package. A true gem of a distro!
www.slitaz.org

Ubuntu 8.04 product cheat sheet

Ubuntu has evolved from being a single, all-purpose installation CD to becoming a range of products encompassing a wide variety of deployment scenarios. Some of these are officially supported Ubuntu editions, while others are maintained by a small community of third-party developers, but all have one thing in common: a Linux kernel and base Ubuntu system that's uniform across the product range. For those readers who wonder which is the best product for their needs, here's a brief guide with product descriptions and form of availability.

	Edition Purpose	Available as
Kubuntu-KDE4	Ubuntu with the latest version of KDE 4.0	Installation CD, Live CD
Edubuntu	Ubuntu for schools; includes educational software	Add-on CD
Gobuntu	Flavour of Ubuntu that includes only Free Software as defined by FSF	Installation CD
Ubuntu Server	Edition of Ubuntu for servers, supported for five years	Installation CD
Ubuntu JeOS	Minimalist Ubuntu designed specifically for virtual appliances	Installation CD (i386 only)
Ubuntu Studio	Contains a large collection of audio, video and graphics software	Installation DVD
Mythbuntu	Minimalist Ubuntu with *MythTV* and related software	Installation CD

Hit List

The ten most visited distro pages on DistroWatch.com, 4 April–2 May 2008 (average hits per day)

Distro	Number of hits	
1 Ubuntu	3,702	↔
2 OpenSUSE	1,765	↑
3 Fedora	1,578	↔
4 Mint	1,351	↓
5 Mandriva	1,349	↑
6 PCLinuxOS	1,092	↓
7 Debian	841	↑
8 Kubuntu	796	↑
9 Slackware	743	↑
10 Dreamlinux	716	↑

» DistroWatch.com monitors the popularity of distributions based on the number of visits to each of its distro-specific pages. While these figures do not represent the actual install base, it is an indicator of which distros were hot during each specific time period. LXF

Desktop paradise

Had it with Human? Bored with blue? Let **Graham Morrison**, our resident aesthete, guide you to form and function on the Linux desktop.

We all spend a great deal of time at the Linux desktop. It's our office, living room and games room rolled into one. And like those rooms, the experience is a lot more pleasant when you've made your environment more comfortable and more tuned to the way you work. It's the virtual equivalent to moving the sofa in front of the telly, putting beer in the fridge and lighting a few candles.

It might sound strange, but your desktop is an expression of who you are, and how we use computers. That's why the internet is littered with people who post images of their desktop, even going to the trouble of designing their own icon sets and building the applications that let you change everything in the first place. Some changes are purely for decoration – a background image or colour scheme, for instance. But there are others that reflect your working routine, such as application icons in the toolbar and the keyboard shortcuts for launching them, and even the font sizes and window position.

> **"We're going to cover the areas where small changes yield big results."**

Over the next few pages, we're going to cover the main areas on the desktop where small changes yield big results, and cover the main desktops most of us enjoy using. We hope you'll be inspired enough to make a few changes yourself.

Under the microscope:

Xfce
It's often overlooked, but this is a desktop environment you can truly make your mark on.

KDE
Forget blue, change the colours around and banish all thoughts of 'kool' from your head.

Gnome
Turn Gnome into the equivalent of a nice soft cushion with options you never knew existed.

Compiz
The icing on the cake. *Compiz* can make any desktop look better, and it's not all for show.

› **Boring old KDE. Don't worry, we're going to make it all better.**

Xfce

Start from the ground up with a desktop manager that makes no assumptions about how you want to use your computer.

Distros often ignore *Xfce* in the clamour to get hold of the latest version of KDE and Gnome, but for desktop modification, *Xfce* is the best place to start. This is because the default *Xfce* desktop is a blank canvas. This can put people off, as their first glimpse of the desktop is likely to give the impression of a Spartan and unloved one. But behind the scenes, *Xfce* is one of the most modifiable Linux desktops available, easily capable of looking like Gnome or KDE should you so wish. You just need to spend a bit of time with it.

Seeds of change

The place to start is the small star-shaped icon on the desktop. This is the Xfce Panel, and is just like the panels on other desktops. The only difference here is that there are no icons installed by default. To remedy this, right-click on the icon and select 'Add New Item'. A window will open listing all the available panel applications. You might want to add 'Clock', for example, so you can see the time. Another good choice is the 'Icon Box' applet, as this will display an icon for all the minimised applications on your desktop. The Desktop Pager helps you see which desktop you're on, and you will always be able to switch between desktops using the Ctrl+Function key combination. Before long you'll be able to recreate exactly the same panel you might be used to on another desktop. You can even load Gnome applets with the *XfApplet*, and there are other, more creative choices, such as the embedded command line known as *Verve* or the *Smart Bookmark* applet. You can create links to your favourite applications with the Launcher icon, and you can change the appearance of the panel with a right-click and selecting Customise Panel. From the resulting window, you can change its size as well as which border of the screen the panel is attached to. Click and drag the panel edges to move the panel around your desktop.

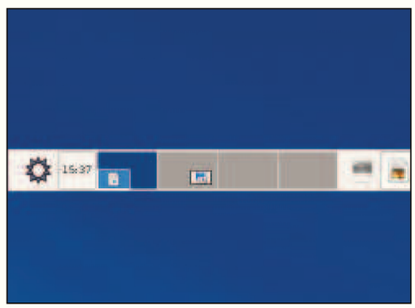
The main window into the world of *Xfce* is the right-click menu. It's from here that you can launch the usual array of Linux applications, as well as access the Xfce Settings Manager, which can be started from the top 'Settings' menu option. From this window, you get access to the usual array of options you use to change the look and feel of the desktop.

› ***Compiz*** **can be used to make any desktop environment look modern, and things are no different with *Xfce*.**

On the menu

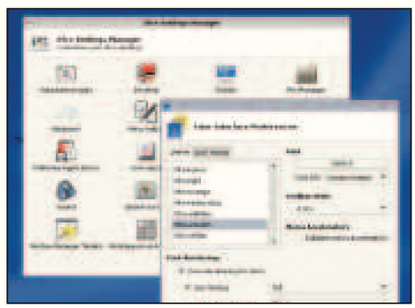
The User Interface icon is the most interesting of these options, as this opens a window from where you can change the widget set used when windows are drawn on the desktop. You can switch between themes, icon sets and fonts, completely altering the appearance of the desktop. You might also want to change the Desktop Preferences, as this lets you use your own image for the background, or use a gradient between one colour and the next. The Window Manager control panel is also useful. From here you can change how each window on the desktop is decorated, as well as the order of the icons used in the window border for maximising/minimising and moving the window around. »

Three top tips: Xfce



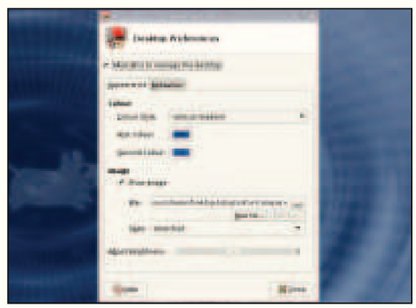
1 Panel up

Start by adding a few extra functions to the panel. This will help *Xfce* feel more like a desktop you're used to.



2 Themes

Change the bare default theme to something more interesting. There are even themes that look exactly like a typical *Qt 4* application.



3 Backdrop

Use either a background gradient or an image for your desktop, to balance the default flat colour used by many distributions.

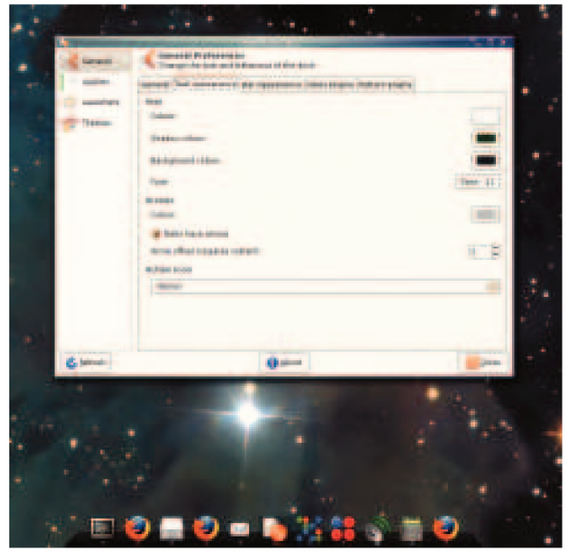
»

Gimping Gnome

There's no place like Gnome.

It's fair to say that Gnome, as installed by default with most distributions, takes a more reserved approach to desktop modification potential than KDE. It usually features a streamlined user interface, with far fewer points of entry than the default KDE desktop.

You also find two panels – a task manager on the bottom of the screen, and a menu option on the top border – much like the one you find on the OS X desktop. If you don't like this approach, you can remove one of them by right-clicking and selecting 'Remove', but we rather like the use of two panels. For some reason, the top panel, with its clock and Places menu, seems to fit well with the Gnome philosophy, and there's more than enough screen space on a modern display to have both panels enabled.



› **Gnome's *Avant Window Navigator* is the best implementation of an OS X-like Dock we've seen on the Linux desktop, and a perfect replacement for the lower panel in Gnome.**

Smashing icons

Too many default themes use burnt sienna and orange (or whatever Ubuntu is calling it these days). You can alter the entire desktop by simply switching the colour scheme to use blue or green. Changes like these are made from Gnome's Appearance config panel (System > Preferences). The default page lists the installed themes. These are simply desktop decoration, icons and colour selections packaged into a single element that you can switch between quickly. You can edit any of these packages by clicking on the 'Customise' button, which will open a window from where you can choose your own combination of each element.

But the best thing about the Gnome Appearance window is its use of drag and drop. You can add new elements and themes by downloading a package and dropping it into the Appearance window. The element will automatically be installed and activated, and a new 'Custom' theme added to the list. This is a duplicate of the currently running theme with the new element inserted into it. For example, if you download a new icon set from **www.gnome-look.org** and drag the resulting tarball into the appearance window, the new icon set will be added to the available list and activated automatically. This makes it very easy to try out new themes, and it's the best way to make the desktop your own.

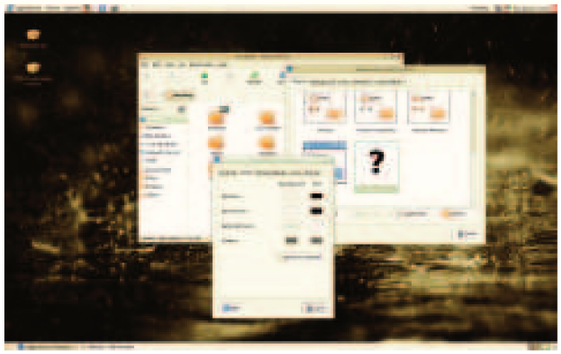
> **"AWN makes the perfect replacement for Gnome's lower task manager."**

› **Gnome's Appearance window is drag-and-drop enabled, so it's childsplay to use.**

Docking applications

Gnome has a couple of excellent dock widgets to replace the lower task panel. The easiest to use, and install, is called *SimDock*. When run from the Accessories menu, it will attach itself to the lower edge of your screen, complete with scaled icons that represent any currently running applications. Right-click on the panel to add your own application shortcuts. But *SimDock* is also a little crude. It grabs a bitmap version of the backdrop as uses this as the image background, with the result that it doesn't always line up with the background image. Fortunately, there's a better solution. The *Avant Window Navigator* (*AWN*) is the closest experience us Linux users can get to Apple's Dock, and it even surpasses it in certain areas. The only downside is that *AWN* needs to use a compositing manager to blend the backgrounds and reflections on to the display in real time. This means you need to be running *Compiz* for it to work, but it's worth the extra hassle – especially if you're going to run *Compiz* anyway.

AWN also makes the perfect replacement for Gnome's lower task manager (at the bottom of the screen), because it duplicates the functionality and uses less space. When run for the first time, it displays icons for each running application on your desktop. You can see the preferences window by running the *awn-manager* tool, or by right-clicking on the toolbar itself. From the preferences window, you can add links to new applications, as well as change the look and feel of the toolbar. We thought the '3D Turn' effect looked excellent, although it has a tendency to suck up CPU resources when you drag the mouse cursor across the toolbar.



› **Here's our own 'Mushy Pea' theme, using custom icons and colour palette (let us know if you'd like us to make it available).**

To add some serious functionality to your Gnome desktop, you need to look at adding applets. These are the small, self-contained applications that add certain functions without burdening your system with a full-blown application, and there are two broad types. The first are panel applets, and these can only be added to the Gnome panel (the bar at the top or bottom of the screen). The second type of applet live on your desktop background, and are very similar in function to Apple's Dashboard widgets. In Gnome, these are called GDesklets.

Widgety grub

Before you get started, it's a good idea to trawl through your distro's package manager and install any applets that take your fancy. This is because you often can't tell what a particular applet does until you've gone to the trouble of running it. To add a panel applet, right-click on the panel and select 'Add to Panel'. As with KDE, this will open a window that lists all the installed Gnome-compatible applets. Our favourites include the following:

» **System Monitor** A horizontally scrolling histogram of CPU/Memory/Disk/Network usage. Right-click to open a preferences window from where you can change the colour of each component.

» **Desktop Drapes** Tell the Drapes configuration panel where you store your desktop wallpapers, and it will automatically switch between them every 15 minutes (by default).

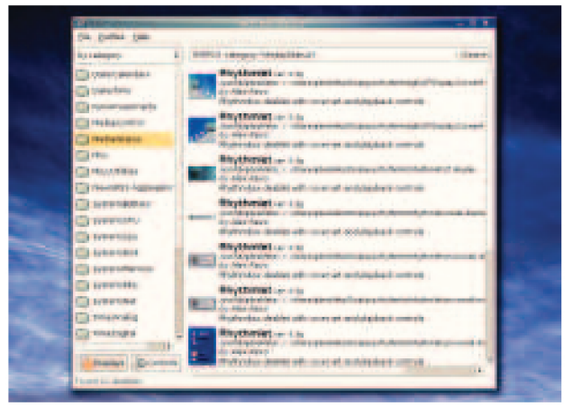
» **Drawer** This is a secret repository for further applets that are hidden away behind the drawer icon. It's a good place to hide any guilty pleasures, such as the 'Eyes' or 'Fish' applets.

» **Dictionary Look up** And if your vocabulary ain't too good, type a word into this text field and the widget will grab its definition from definition from the free version of the Webster's online English dictionary.

GDesklets

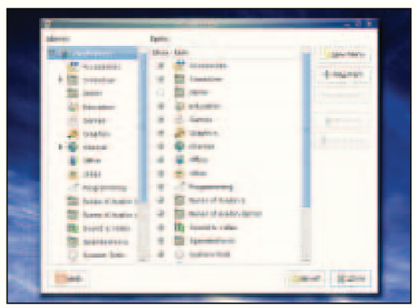
Toolbar applets are good for small tasks, such as providing the time or date, but they're not much good when you need more space. The solution is something that the developers have christened a GDesklet. It's an applet that sits on your desktop background, much like *SuperKaramba* and Plasma in KDE, and Dashboard widgets in OS X. It's not part of the default Gnome desktop, which means it needs to be installed separately and run from Gnome's Applications > Accessories menu. A small icon will appear in the toolbar applet area of your display, and you can add new widgets to your desktop by right-clicking on this and selecting 'Manage Desklets'. A window will appear with a category list in the left panel, selecting one of these will populate the GDesklet list on the right-hand side.

Many different applets are included by default, including calendars, resource managers, temperature sensors and various quotes of the day. Double-click on the one you want, and the applet attaches itself to your mouse pointer. It's then just a case of dragging the applet to the position you want it to occupy on the desktop. Applets are locked to their positions, but you can move them by using their right-click menu, or by holding down the left Alt key and click dragging the applet. As with most aspects of desktop modification, the best approach is normally trial and error. »



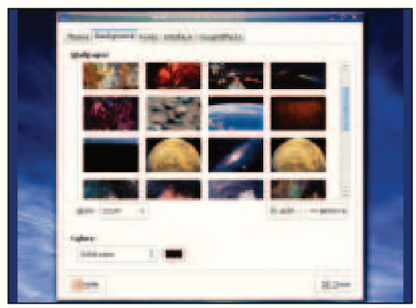
› **GDesklets are like KDE's *SuperKaramba* applets, and there's a bewildering array of options to choose from.**

Three top tips: Gnome



1 Prune the menu

It doesn't take long for the apps menu to get bloated. Cull the ones you don't use via System > Preferences > Main Menu.



2 Wallpapers

There are many websites you can use for wallpaper inspiration, but our favourites are NASA and the National Geographic.

3 Backgrounds & emblems

One little-used feature of Gnome's file manager is its ability to mark certain files with emblems, and change the browsing background image.

KDE gets cool

Beauty is only be skin deep, but what happens if you don't like blue?

KDE could be considered the most prosaic of all the common desktop environments. Just take a look at it the screen when you've finished a fresh installation. There's a standard panel, somewhat datedly stretched across the entire lower border of the screen. An applications menu lives in the bottom-left corner, in just the same place it's been for over a decade. And depending on the distribution you've chosen, the applications listed in the menu take on a messy ad hoc order that can make it very difficult to track down the tool you're looking for.

This approach hasn't made KDE many new friends over the last few years, and even KDE 4 hasn't changed the default look a great deal. The trouble is that many long-term KDE users have carefully crafted a configuration that they created a long time ago. They simply migrate these settings from one installation to another, and seldom experience a vanilla KDE installation. This is because almost every single setting, for every single KDE application, resides within a single directory in your home folder. This folder is **.kde**, a partial mirror of a directory usually found in **/usr/share/kde**. If a setting exists locally, it supersedes the one in the global directory – and that's how you copy your settings from one installation to another.

› **Changing the widget style in KDE alters the way that various windows components are rendered. You can see a preview as you switch between each style in the Control Centre.**

Look and feel

If you want to change the look and feel of your KDE desktop, you need to open KDE's System Settings panel. This particular window is a cornucopia of configuration options, but we need to look past the distractions and go to the 'Look and Feel' section. This is where you change things like the colour palette, fonts and styles used to render KDE windows, and it's all self-explanatory. Our pick of the best options include switching to the 'Klear looks' style, which emulates the classic Gnome look with a similar name, and using the Plastik window decorator – the least offensive of the options available. Changing the colour scheme can also help, but with KDE's icon themes mostly geared towards the use of blue, it's difficult to find a different scheme that doesn't clash with the toolbar or your desktop icons. You can easily switch icons of course, but the Crystal set are by far the best in our opinion, unless you're using KDE 4, in which case the default Oxygen set is an improvement over Crystal. You can even install the Oxygen icons on a KDE 3 desktop. Just download the package from **www.kde-look.org**, switch to the Icons page in the Appearance window in System Setting, and select the downloaded tarball. KDE will install the icons into your local KDE directory, and they can be activated from the same Icon page window, although you'll need to restart the KDE desktop to see the full effect.

Panelling

Another feature of the KDE desktop that often lies neglected is the KDE Panel, the flexibility of which means that you can bend it to almost any task you may wish. The most common addition is a Panel Applet. These are the small, functional icons that run quietly in the corner of your screen. The clock is one, for example, but the default settings are a little crass. You can quickly create a much more aesthetically pleasing clock by right-clicking on the applet and selecting 'Configure Clock'. Try changing the type to 'Plain Clock', enabling the frame and changing the background colour to a darker shade of grey.

You can add new applets by right-clicking on a blank area in the panel and choosing 'Add Applet to Panel', but you should install any applets you can find from your distribution's package manager first. Ones to look out for include:

» **KNewsTicker** An RSS reader that scrolls headlines across the bottom of the screen; click on one to open the originating page. It's amazing how much you can read while doing other things.

» **System Monitor** Three tiny vertical or horizontal bars that represent CPU usage, free memory and swap file usage. Essential for finding wayward processes and crashed versions of *Firefox*.

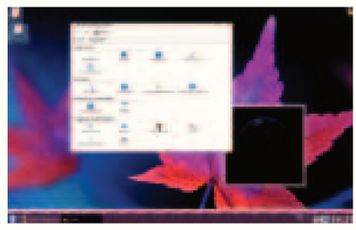
» **KWireless Monitor** Includes signal strength and a list of local access points for your wireless internet connection. Select one to join the network.

» **KNetload** Draws a histogram that illustrates the amount of data

KDE 4

Unless you're willing to get your hands dirty, there's not all that much you can do to KDE 4 to alter its appearance. But if you're happy to edit configuration files, then you can change the default images used by the panel.

KDE 4 already has some great options for adding your own feel and functionality to the desktop. Plasma widgets are going to be the first port of call, as the interface for adding them is integrated into the desktop. But there are very few to choose between, and until KDE 4 increases in popularity, this is unlikely to change. There's still a plan to build Dashboard compatibility into Plasma widgets, which should add a vast amount of potential to the KDE 4 desktop, but until it works, you're left with the rather prosaic collection that comes with a default installation. There are also fewer 'Look and Feel' options in KDE 4's configuration windows than the copious number found in KDE 3, and the desktop panel is no longer as flexible as the multiple options provided by KDE 3. On the positive side, *Konqueror* is still there, and still the most flexible and customisable file manager available, and the default Oxygen icon set takes a lot of beating.



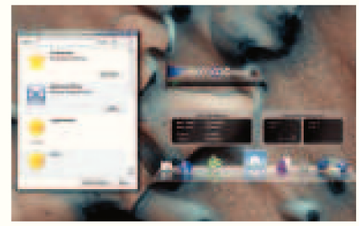
› **KDE's menu can quickly become a mess. We recommend replacing the default with Tasty Menu, which is much easier on the eye and features its own application search.**

coming into and going out of your network connection. Useful if you pay for bandwidth.

» **KSim** Many system monitors rolled into a single application. Takes up a bit of room on the screen, but from the panel you can view process management, hardware temperature and many other stats.

SuperKaramba

The king of desktop applets is undoubtedly *SuperKaramba*. It has spawned a generation of copies, and is the primary inspiration behind KDE 4's Plasma. Nothing can touch its flexibility on the KDE 3.5-era desktop, and it's still a force to be reckoned with. *SuperKaramba* should be installed by default, and when you first launch it, you won't find any applets installed by default. To get some, click on the 'Get New Stuff' option at the top of the applet list. This will download a list of applets from the *SuperKaramba* site, from which you can choose which you need and install with a simple double-click. The applet will then appear on your desktop, from where you can drag it around and lock it into position. If there's a configuration panel for the applet (such as setting your location for a weather update), right-click on the applet and you will see the menu. You can start and stop *SuperKaramba*, as well as any installed applets, from the icon that appears in the lower toolbar on your desktop.



› ***SuperKaramba*'s applets include the usual array of system monitors and weather applets, as well as some decent recreations of Apple's Dock.**

Panel division

Panels can be placed anywhere on the screen, and you can have as many as you like. Right-click on an empty section, choose 'Add New Panel' and you'll see a list of six panel types. The Dock Application Bar is purely for *WindowMaker* applications (a rival window manager). External Taskbar opens a new tasks selection panel, from which you can see all running applications and switch between them. This is useful if you've got a second screen, as you can let this panel occupy the entire border of your second display. The option listed after the External Taskbar is the Kasbar. This was originally designed as a taskbar replacement, but it's now a slightly prettier panel that sits on the right-hand border of your display. The best thing about the Kasbar is that it's better suited to sitting vertically on your screen. Applications and icons in the traditional panel view have a hard time adjusting to a vertical aspect (even though you can drag the panel to any screen edge), and Kasbar creates more appropriate icons and menus. But nothing beats the vanilla panel. You can add as many as you like, either free-floating or connected to the edge of your display, and each new one is just as capable as the default option. This means you can add applets, add the taskbar, and treat any new panels like an extension to the original. We'd recommend changing the size of the panel, to either small or tiny, and even altering the length of a panel so that it doesn't stretch across the entire edge of the screen.

> **"The KDE app that gets closest to the Mac OS X Dock is called KoolDock."**

The KDE application that gets closest to the Mac OS X Dock is called 'KoolDock'. This needs to be installed through your distribution's package manager, and when you run it for the first time you will need to enter a few config options. It runs on the lower edge of the display, and by default will only feature six icons. These will scale up in size as you roll over the dock, which will itself hide beyond the lower edge of the screen after five seconds. It can be brought back to life by moving the mouse over the same edge. You can enable a task manager from the KoolDock preferences, as well as the KDE applications menu. As an alternative, we'd recommend accessing the Application menu from a right-mouse button click on the desktop instead, and this can be accomplished from the Desktop > Behaviour > General page of the KDE Control Centre.

› **Oxygen icons may be one of the best aspects of the KDE 4 desktop, but there are packages available for both Gnome and KDE 3.5 that bring the same look to your favourite environment.**

»

Compiz-Fusion

Real eye candy that's compatible with any desktop environment – as long as you've got the graphics hardware.

***Compiz* is one of those Linux technologies that has caught the collective imagination. It may be frowned upon by some as being a waste of resources and nothing but eye candy, but *Compiz* has done a great deal of good for the Linux desktop. It exceeds similar technologies in Apple's OS X and Microsoft's Vista, and gives non-Linux users a great deal to talk about. Can there be anyone who hasn't seen the 3D desktop cube, or read a description of the wobbly windows in the general computer press?**

But the bottom line is that *Compiz* is a good thing, and it's finally mature enough to use in a production environment. The latest releases of both Mandriva and Ubuntu include *Compiz* support by default. This means that you should be able to install *Compiz* on your favourite distribution just as you would any other application. It's no longer a tricky process. Just search for 'compiz' in the package manager, and install this along with any associated packages. You'll usually find a plugins package that includes a pile of extra effects, for instance. *Compiz* works by replacing your desktop's window decorator with one of its own. The window decorator is the process responsible for rendering windows and window borders. Gnome's is called *Metacity*, while KDE's is called *KWin*. The *Compiz* window decorator is also called *Compiz*, and replaces the window rendering functions of the original window decorator with its own 3D enabled, eye-candy compositing version.

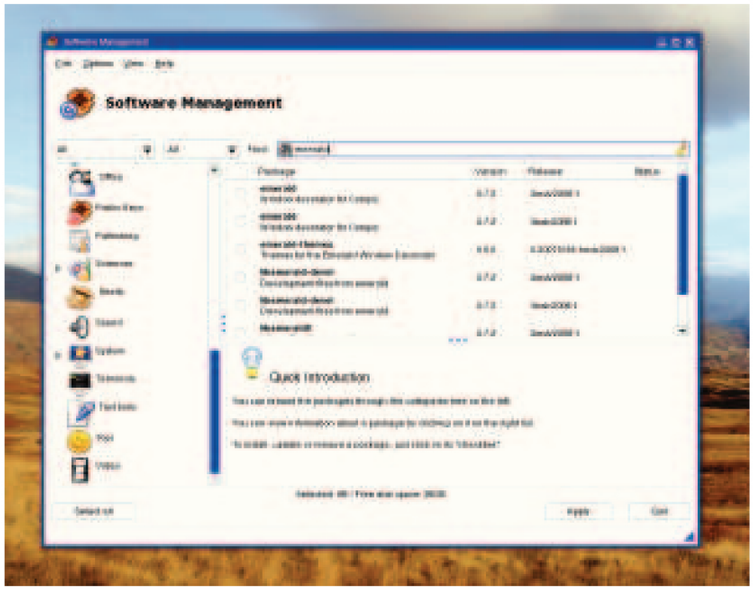
Not all *Compiz* effects are useful. Motion Blur, for example, can make your desktop harder to use than when it's disabled.

Installation

Other than *Compiz* packages, the only absolute requirement is hardware graphics acceleration. *Compiz* places many demands on your graphics hardware, and older 2D accelerated cards can't cope. By modern games standards, graphics hardware requirements are very modest, but 3D acceleration is essential. For ATI and Nvidia users, this means proprietary drivers. Mandriva One and Ubuntu include the option to install proprietary drivers from within the distribution. Third-party packages are available for Fedora, Debian, OpenSUSE and Gentoo users. In the case of Nvidia, it's not that difficult to install the Linux drivers available from the **www.nvidia.com** website, as long as you've got the kernel source code installed (or a slightly older distribution). ATI drivers can be a little tricky. But it's worth the effort. After you've installed the *Compiz* packages, there are normally several ways of starting the effects. From Ubuntu, enable 'Extra' in the Visual Effects panel of the Appearance preferences Window. From Mandriva, find your way to the 'Configure 3D Desktop Effects' page in the Mandriva Control Centre and enable 'Compiz Fusion'. If you have the option, use the native compositing support rather than *Xgl*, as this is more efficient and requires less tweaking.

> **"Compiz will be the envy of your alternative operating system friends."**

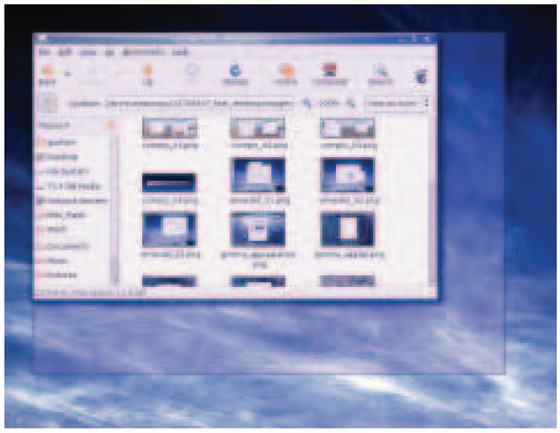
› *Compiz* is now officially part of popular desktops like Mandriva Spring 2008 and the latest Ubuntu release, making it easy to install.



Most default *Compiz* installations are modest when enabled. You typically find a subtle drop-shadow effects and a new task switching tool. These are the effects least likely to offend. But there's a great deal more to experience if you're prepared to get your hands dirty, and the tool for doing that is called *CCSM*.

Pretty is a feature

If *ccsm* isn't installed, either search for it by name or try looking for 'Compiz Config' in your distro's package manager. The letters *CCSM* represent the Compiz Config Settings Manager, and it's from this burgeoning behemoth of configuration options that you can carve out your own unique take on *Compiz*. When you first launch the application, you'll see what we mean. Depending on the number of plugins installed, you'll typically see dozens of separate icons, each of which hides several complex and poorly documented pages of settings. The best way to find out what something does it to enable it. But even then, things aren't



› Other *Compiz* plugins, such as Resize Window, can help to make your desktop experience a little more smooth.

straightforward. If you want the desktop cube, for example, you need to enable the Desktop Cube effect as well as the Rotate Cube effect, or you'll never be able to see it. Similarly, you may think that enabling Snapping Windows is a good idea if you want to get windows to snap the borders of the desktop or other windows. Except that when you try to enable Snapping Windows, *Compiz* informs you that Wobbly Windows needs to be disabled first. This isn't much good for those of us who like our windows wobbly, until you realise you can have both. Snapping Windows can be enabled from within the Wobbly Windows configuration page, and it's normally enabled by default, only it's only activated when you hold down the hift key while dragging windows. The 'Snap inverted' option reverses this, enabling Snap windows whenever you drag a window. There are many similar options and problems within *Compiz*, but regardless of these issues, *Compiz* will still be the envy of your alternative OS friends. Here are a few of the plugins that make it worth all the effort:

» **Desktop Cube** Synonymous with *Compiz* since the earliest days, the desktop cube pastes a different virtual desktop on to each side of the cube. It doesn't even need to be cuboid. Increase the desktop size in the General options page of *CCSM*, and the 'cube' will adapt accordingly. You may also need to replace your desktop pager applet with a *Compiz* compatible one, as the older variety don't understand the new layout.

» **Resize Window** This simple effect replaces the window resize function of the window manager with something a little more glossy. By default, that means a constant screen update of the window's contents, but we find this effect too taxing on the CPU. We find the 'Rectangle' resize mode much more practice, as it replaces the window with a transparent colour. It still looks good, and uses fewer system resources.

» **Window Previews** When you minimise a window to the task bar, this plugin will enable you to see the contents of the window by holding the mouse over the minimised icon. It will also show a preview of windows on different desktops, which makes it ideal if your desktop happens to look like an application menagerie.

» **Enhanced Zoom Desktop** This falls under the Accessibility category in *CCSM*, but it's one of the most useful plugins of the entire installation. It allows you to zoom into the area directly under the mouse cursor by holding down a special key (normally the 'Windows' key) and scrolling the mouse wheel. It's great for enlarging small sections of the screen, and is particularly well suited to small video windows. LXF

Over to you

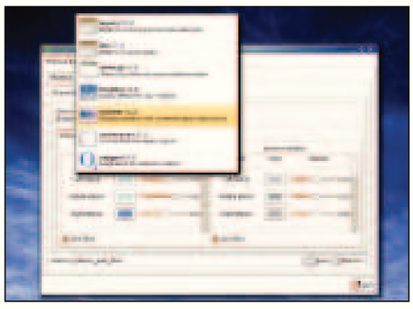
We'd love to see the results of your desktop tinkering. If you come up with anything half decent, why not take a screenshot and drop us a line at lxf.letters@futurenet.co.uk or post your efforts to the LXF Forums. If we like what we see, we may even put a collection of the best on the **LXF**DVD.

Three top tips: Emerald Theme Manager

Most Linux desktops, including Gnome and KDE, feature their own window themes, but these are lost when you switch to the *Compiz* window manager. Fortunately we have the *Emerald Theme Manager*, the *Compiz* equivalent to the Gnome and KDE ones that's more flexible and better looking. *Emerald* is seldom installed by default, but you should find it in your distribution's package manager without difficulty. The best way to run *Emerald* is from something called the *Fusion-Icon* applet. This is a small tool that lets you switch between window managers and launch the *Emerald Theme Manager* and *Compiz* from a single icon. From *Fusion-Icon*, you also need to enable the *Emerald Window Decorator* before launching the theme manager.

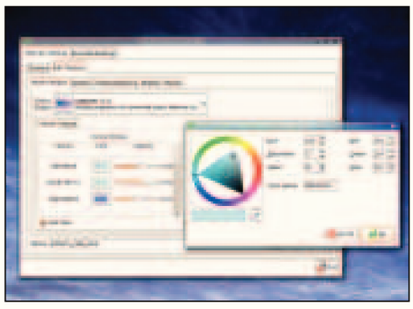
When first installed, *Emerald* doesn't include any actual themes. These can be downloaded from **http://themes.beryl-project.org**. Click on the Import button in the theme manager to load the theme, and your desktop window decorations will change. But for real fun, you'll want to make your own modifications to your favourite theme. The *Emerald Theme Manager* makes this easy: just switch to the Edit Theme page and make the changes you need.

The biggest differences are brought about by changing the rendering engine. This is responsible for the glass-like effects many of the themes use in the window titlebar. Oxygen, for example, is similar to the Aero look used by Microsoft's Vista, and 'Trueglass' is quite Apple-like. The other options you have for colouring the window frame are entirely dependent on the rendering engine you choose, and any updates you make will be reflected in the window decoration in real time.



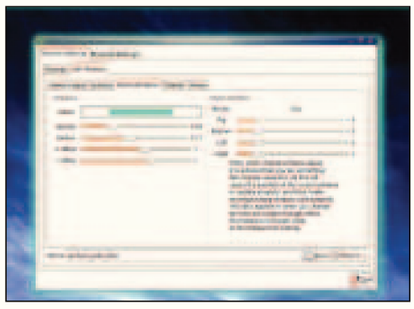
1 Rendering engine

Our favourite rendering engine is called *Vrunner*. It looks good and it doesn't overwhelm you with too many options.



2 Title-bar colour

We opted for a green shade on one side and a deeper blue on the other. *Emerald* blends these to look something like a natural reflection.

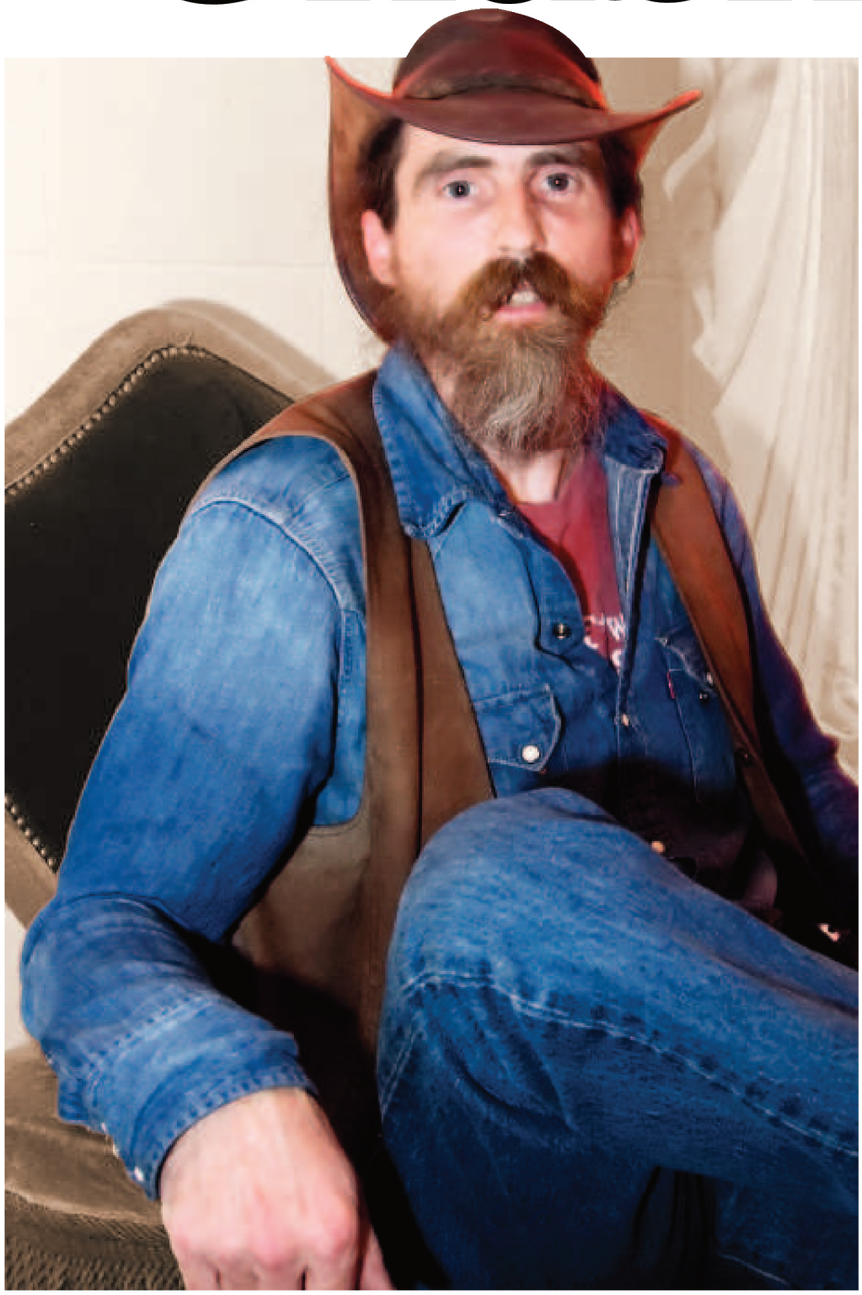


3 Drop shadows

You can make shadows any colour you like, with brighter tones creating a bloom effect around the windows.

Quick as a Gnash

Adobe spent ten years making Flash, but it took Rob Savoye 1/10th that time. **Paul Hudson** speaks to a coding maestro...



LINUX FORMAT Interview

Not just anyone can reverse engineer the internet's most popular proprietary format. Then again, not just anyone can code on GCC, GDB, OLPC, Cygwin, DejaGnu and Linux while finding time to do hurricane-relief work in New Orleans. But Rob Savoye did all that and more, and his free rebuild of Adobe's Flash Player has added open codecs so that the web has the chance of a truly free future.

Linux Format: So just as a brief intro, could you give our readers a brief history of your work in the free software world?
Rob Savoye: I started working on free software in 1987 on the GCC project... 20 years now! I worked on GCC and GDB for a hardware company who couldn't afford expensive compilers from Sun Microsystems. So free software helped us in those days. So I worked on GCC and GDB for a couple of years, and what happened was that in the late 80s we got so many requests for paid support that we started Cygnus Support in 1989. I worked for Cygnus Support almost up to the end when it was sold to Red Hat around 2001. So I've pretty much only done free software for 20 years now. I've done a lot of work on GCC and GDB, I wrote DejaGnu, I wrote libgloss, I worked on newlib, I started the Cygwin project, and I designed the eCos operating system. I've worked on a lot of Linux stuff since 91, and I've spent years consulting to Nasa and others on GCC and Linux kernel work. Then I started the Gnash project as a user interface layer for set-top boxes.

LXF: Wait, so you went from GDB to Gnash? That's a big jump!
RS: A friend of mine, John Gilmore, invested in a lot of little companies. And so he calls me up one day and says, "hey, I know some guys who want to do a Flash-based user interface for their stereo," and I'm like, "great! I'm into digital music, this sounds fun." And so, I searched the internet and saw what was out there for free software players, and there weren't that many. So I took the technology out there and added all this ActionScript stuff and finished the user interface for the stereo. It was a six-month project and I never really thought about it – it was a one-off project, right? Then a couple of months later, John calls me back and says, "hey, how would you like to turn that Flash player thing into a plugin for Firefox?" I'm like, "John, I don't do graphics, and besides, I'm packing to go to New Orleans for Katrina relief." So when I got back from Katrina five months later I was broke, so I called up John and said "yeah, a Flash player plugin for Firefox sounds great!" And so I did it. And instantly we got a huge amount of publicity just because it worked. It didn't have YouTube support at the time, but for a lot of us free software folks it was important,

and because of my background in the GCC team, Gnash runs on 64-bit machines, it runs on multiple processors – way, way, way more than the Adobe version – and I suddenly realised that there was this real need for free Flash technology, and that scope of the project has really expanded recently into a lot of work in patent-free codecs. But that was it – Gnash is a like a lot of other projects in that it wasn't a decision initially, it just happened. And then I realised, good projects find *you*.

LXF: So you are still involved with GCC or GDB?
KK: Slightly. I did a lot of the GCC work for the OLPC project. I did all the compiler optimisations for the Geode GX chip. There aren't that many freelance GCC hackers around! I'm really into embedded systems, so I'm one of the guys who helped add all the cross-compiling support into GCC and even did the first Linux port to 68K a long time ago. And then what happened was that I was working on Gnash – funded by myself and John Gilmore mostly, and often not funded at all – and then what happened was that one day I got a call from Bob Young (ex-CEO of Red Hat), and so Bob's like "I've got this little press business now, and we want to really start getting into digital media more. We really need free software and I know with some more money you guys could pay your developers, you could work full time, you can increase your pace of development so that my company could use this stuff." So we decided to do it. So Bob has been sponsoring us for a year and a half. And we realised recently that that was not quite sufficient as our scope expanded into what we're calling open media as opposed to Gnash – that's only a part of it. So we set up a non-profit foundation called Open Media Now (**openmedianow.org**), Bob and John are both on the board of directors, and we're talking to a lot of companies who have never had Flash support for their systems. If you use MIPS-based hardware, SH-based hardware, weird ARM chips, 64-bit PowerPC, then we're it. We have PS3 support! We're on Itanium, we run on Solaris, we run on a lot of interesting operating systems. We're really into cross-platform, and Adobe just doesn't care about multiple platforms.

ON FINDING A PROJECT
"Gnash wasn't a decision initially, it just happened. And then I realised, good projects find *you*."

LXF: What was the point where you decided that Gnash wasn't enough, and that you needed to push for open media?
KK: So what happened is this little thing called "software patents". When you use MP3 or FLV, they're proprietary. And although we use FFMPEG and Gstreamer – we actually support all these codecs – we can't distribute Gnash that way. So I got buried in bug reports about YouTube not working, and it's infuriating. Even when we did the OLPC "give one, get one" program, I was buried in bug reports saying, "I thought YouTube worked on this thing?" But of course the OLPC project cannot legally redistribute the codecs. So what happened was that I was getting buried in bug reports, so we suddenly realised that the issue we were trying to solve wasn't just reverse engineering Flash players, the problem was the media. So we're doing a lot of work to open that up – Gnash fully supports patent-free codecs such as Ogg Vorbis and Theora, and Dirac and stuff. But the problem was bigger, and we realised we needed to build an entire infrastructure, because the free codecs have all been out there for years, but one project supports one but the server doesn't... it's just not there. And you need a seamless infrastructure if you're going to make media free. Commercial companies don't care about this sort of stuff because they license it, but most of our friends are in the free software world, so we want to support the Fedoras, the Ubuntus, the Debians, the BSDs, and all those people. Wikipedia is about to put up a new video sharing site that's all Ogg Vorbis and Theora-based, and they need a server for it. We're working right now on Flash-based video conferencing, and that's server-side – and it's all proprietary formats. But if you have the server and you have the client, then you can change the codec and nobody cares. LXF

LINUX FORMAT
The #1 source for Linux

Reader Awards 2008

After a brief hiatus, the UK's only reader-voted free software awards are back in action - get involved today!

The last 12 months have been monumental for the free software movement. With big releases such as the Eee PC claiming headlines even in the mainstream press, Firefox and OpenOffice.org charging forward with new releases, and distros such as Ubuntu and Fedora bringing desktop joy to the masses, it's been a cracking year no matter what kind of Linux user you are. But even in such a great year, there are projects and people that stand out as having made a particularly great contribution to free software, and that's where you come in. This is the Linux Format Reader Awards 2008, which means you – the LXF reader – get to vote for your favourites of the year. This issue kicks off the nomination process: over the page you'll see the list of categories up for grabs. Have a read through, make some coffee in your shiny new LXF subscriber mug, and think it all over. When you're ready to nominate some winners, point your browser to www.linuxformat.co.uk/awards2008 and submit your choices. We'll be closing the nominations once everyone has had a chance to submit their favourites, at which point voting will open. Watch this space for more information!

www.linuxformat.co.uk/awards2008

Best Desktop Application

This category is wide open to a number of different programs. Past winners have included Gimp and Gnome, but with fresh new programs such as F-Spot, Beagle and Autopackage, plus longer-running apps such as Scribus and X.org, this award is sure to be hotly contested. Last time Firefox scooped both this and the Best Internet Software awards - will there be a new winner this year?

Please note that office and internet software have their own categories.

Best Distro

Yes, we know a lot of you love Ubuntu, and if that's your choice then so be it. But don't forget some of the other awesome distros out there, including Fedora, OpenSUSE, PCLinuxOS and Linux Mint!

Best Development Tool

GCC is popular here, but there are more alternatives now than ever – Intel's own C Compiler continues its flawless Linux support, and MonoDevelop and KDevelop continue to win fans. But only one can win, so which will it be?

Best Hardware Support

The last 12 months have seen major moves from Intel, AMD and Via to open up their hardware support for Linux, and let's not forget Dell's support for Linux on the desktop. Nvidia beat them to the top last year, but are people sick of binary driver hell?

Free Software Project of the Year

This is the most open-ended of our categories, because the winner could be anything from the tiny Python script that is BitTorrent all the way up to the behemoth of KDE, or even the kernel itself! History has shown that the winners of this category aren't always the biggest projects – often it's the small little tools that subtly change the way we work that come out on top...

Embedded Linux Award

In previous years Trolltech practically owned this award, but last time around Nokia pipped it to the post. Of course, Nokia owns Trolltech now, which makes this award all the more interesting – can Navaho, MontaVista or others make the grade?

Best Server Software

Apache Apache Apache Apache Apache Apache Apache. Yup, that pretty much sums up the vote history for this particular award, but if you harbour a secret love for SSH or couldn't living without MySQL, make sure and let us know by submitting your nomination!

Best Office Software

AbiWord and KOffice have been making major inroads into OpenOffice.org territory over the last year, but have they done enough to win your allegiance? Tell us what software makes your office world come to life!

Best Linux Game

Frozen Bubble is your long-time favourite here, but with an increasing number of games being released across all platforms this category is sure to be a lot tighter.

Best Internet Software

More and more software is linking to the internet in cool and surprising ways. Sometimes it's for book covers, other times for lyrics, and other times to snag RSS feeds from news sites. Which software will get *your* nomination?

Best Support Resource

"Do no evil" is Google's unofficial motto, and clearly it was enough to win you all over because Google won this award last time, garnering 50% of the votes. But now it's a new year, so again we ask the question: what's the best place for getting help with Linux?

Best Web Host or ISP

A chance to name the internet service provider or web host that has given your part of the world the finest Linux cuomster service and pricing in the last year. UKLINUX.NET and Rackspace are previous title-holders, but we want to hear your nominations for the web host, big or small, global or local, that deserves to be called the best.

Enterprise Award

Red Hat, Novell, IBM, Sun, Nokia, Canonical and others have all turned in some sterling performances this year, but there are dozens of others worth considering. This is a fascinating category rewarding the company that has done the most to advance open source over the last year.

Best Geek Gadget of the Year

Apple's iPod is the current holder of this category despite its proprietary nature, but since then Linux has seen a resurgence in the device world - not least thanks to the dinky little Eee laptop from Asus! This is your chance to nominate your favourite geek gadget, whether it runs Linux or is merely supported on Linux.

Hackers: in the beginning

The world of hacking didn't just materialise out of thin air. Richard Hillesley looks back to reveal where it came from, where it's at and where we're going.

When journalist Steven Levy was given an assignment for *Rolling Stone* to uncover the "overweight, unfriendly and antisocial" world of computer hackers, what he found was more than just a niche underground movement. The students he interviewed would later be remembered as some of the defining players in the open source revolution. But at the time, 'hackers' were seen as misfits endowed with information that the rest of society didn't have – and an underused moral compass. As far as the mainstream was concerned, they were out to use their specialist knowledge to turn the world upside down... or worse.

However, what Levy discovered was very different. "These people," he later remarked, "weren't antisocial weirdos, but rather fascinating people who were on to something big. They were artists, explorers, adventurers. They were doing things that couldn't be done on a computer, and that's what excited me." The book that came out of Levy's assignment, *Hackers: Heroes of the Computer Revolution*, was published in 1984. It became the classic account of these influential sub-cultures and their impact on computer technology.

From the source

Levy found the roots of hacker culture at the Massachusetts Institute of Technology (MIT). It started among students who'd been members of the Signals and Power (S&P) Subcomittee of the Tech Model Railroad Club (TMRC) in the late 50s and early 60s.

The TX-0 was first used in 1956, and had a massive 64k of memory!

Photo: Computer History Museum

"It was there that I stumbled across the source of all computer controversy," Levy recalled. "Underneath their (model railway) layout was a labyrinth of connectors and cables that allowed them to control their trains. These people were the first to call themselves 'hackers' in the technological sense."

Beneath the layout "was The System, which worked something like a collaboration between Rube Goldberg [American cartoonist working in the style of Heath Robinson] and Werner von Braun," he wrote, "and it was constantly being improved, revamped, perfected, and sometimes 'gronked' – in club jargon, screwed up. S&P people were obsessed with the way The System worked, its increasing complexities, how any change you made would affect other parts, and how you could put those relationships between the parts to optimal use."

Midnight ramblers

The S&P hackers were known as The Midnight Requisition Committee because "when TMRC needed a set of diodes, or some extra relays, to build some new feature into The System, a few S&P people would wait until dark and find their way into the places where those things were kept. None of the hackers, who were as a rule scrupulously honest in other matters, seemed to equate this with stealing."

Inevitably, these trips led to the discovery of a brand new TX-0 computer in MIT's Building 26, and the hackers began to gain access to the machine at a time of night "when no person in his right mind would have signed up for an hour-long session on the piece of paper posted every Friday beside the air conditioner in the RLE lab... The TMRC hackers, who soon were referring to themselves as TX-0 hackers, changed their lifestyle to accommodate the computer."

This Lisp Machine is now languishing in MIT's museum.

John McCarthy, a pillar of the early hacking community, created Lisp.

Photo: NullO

One of the hackers at MIT, Bob Saunders, later explained to Levy: "Other people were off studying, spending their days up on four-floor buildings making obnoxious vapours or off in the physics lab throwing particles at things or whatever it is they do. And we were simply not paying attention to what other folks were doing because we had no interest in it. They were studying what they were studying and we were studying what we were studying. And the fact that much of it was not on the officially approved curriculum was by and large immaterial."

> "The hackers' politics and social life revolved around the life of the machine."

The hackers' politics and social ideals revolved around the life of the machine. Richard Greenblatt, who was sometimes described as 'the hacker's hacker', flunked his course because he was having too much fun on the machine to go to lectures or pass exams. It's said that Greenblatt wasn't much into personal hygiene and was notoriously shambolic in his appearance, but he also famously wrote the first computer chess program, and created Maclisp, a dialect of Lisp for Project MAC on the PDP-6. He was also co-author of the revolutionary Incompatible Timesharing System (ITS) that became the vehicle for hacker software development.

Marvin Minsky led MIT's AI Group in the early 60s.

Photo: Steamtalks

Plus, he was largely responsible, with Tom Knight, for the invention of MIT's Lisp Machine, which became the first commercial single-user workstation.

These early hackers went on to develop the first computer games, the first music software and the first display hacks. They were soon taken under the wing of the AI (Artificial Intelligence) Group, under the leadership of Professor Marvin Minsky and John McCarthy, the inventor of Lisp. In 1963, the AI Group was incorporated into MIT's Project MAC. This was the project for the development of Multiple Access Computing and Machine Aided Cognition, which was funded by the Defense Advanced Research Projects Agency (DARPA) of the US Department of Defense.

McCarthy and Minsky encouraged self-motivation, research and investigation, and the core group of ten or twelve AI hackers were encouraged to follow their own paths of discovery, even as the AI Group's overall scope widened. In 1970, the AI Group gained its independence and became the MIT Artificial Intelligence Laboratory, or AI Lab. But its research and exploration into the more obscure sides of computer technology would continue.

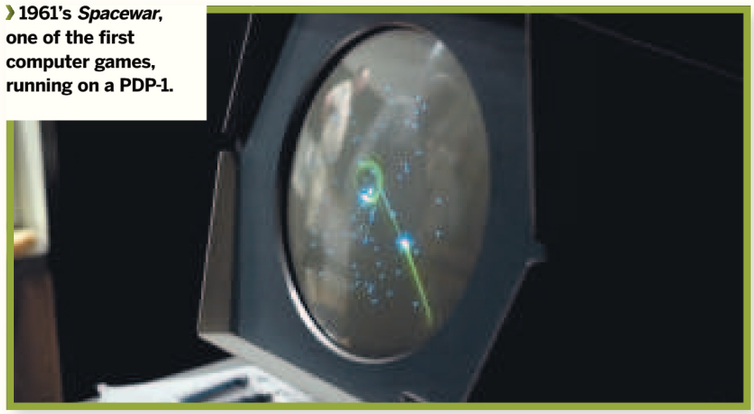
A code of honour evolved among the hackers of the TMRC and the AI Lab, which became known as The Hacker Ethic. The slang that evolved among the hackers was preserved in MIT's jargon.txt »

The hacker ethic

The hacker ethic, as defined by Steven Levy, obeyed the following rules:

- **Access to computers** – and anything that might teach you something about the way the world works – should be unlimited and total. Always yield to the Hands-on Imperative!
- **All information** should be free.
- **Mistrust authority** – promote decentralisation.
- **Hackers should** be judged by their hacking, not bogus criteria such as degrees, age, race or position.
- **You can** create art and beauty on a computer.
- **Computers can** change your life for the better.

hackers:



1961's *Spacewar*, one of the first computer games, running on a PDP-1.

Photo: Joi Ito

and became the basis of the 'Hacker's Dictionary'. The hackers at MIT were the first to define a hack as "a quickly written, short piece of code that makes something work" or "a project undertaken or a product built not solely to fulfil some constructive goal, but with some wild pleasure taken in mere involvement". They were also the first to describe a hacker as someone who "programs enthusiastically, or who enjoys programming rather than just theorising about programming".

While Levy was writing his book, the culture of the AI Lab was beginning to change, reflecting a change in the culture of the outside world. Because of its versatility and elegance, the language of choice among the hackers was Lisp, but Lisp was heavy on memory. This prompted a new project from Greenblatt and Knight, two of the core AI Lab hackers. The Lisp Machine was a workstation dedicated to Lisp, written in Lisp, and for the use of Lisp programmers, networked to a community of Lisp Machines. Little did they know it at the time, but the Lisp Machine – which was in one way a culmination of their work – was also the beginning of the end for their way of life. No-one grieved more than Richard Stallman, who Levy called "the last of the true hackers". For him, the culture of the Lab was everything; community, life and purpose.

Stallman had joined the AI Lab in 1970 and rapidly became one of its star performers, rewriting and incrementing parts of the system. Specifically, he worked on the *TECO* editor, which evolved into *Emacs* (for Editing MACros). However, by the 80s the growing commercialisation of the Lisp Machine by Symbolics – the company that had been set up by former members of the AI Lab – had begun to seduce Stallman's community of hackers. Levy records that Stallman wrote:

"It is painful for me to bring back the memories of this time. The people remaining at the lab were the professors, students, and non-hacker researchers, who did not know how to maintain the system, or the hardware, or want to know. Machines began to break and never be fixed; sometimes they just got thrown out. Needed changes in software could not be made. The non-hackers reacted to this by turning to commercial systems, bringing with them fascism and license agreements. I used to wander through the lab, through the rooms so empty at night where they used to be full and think, 'Oh my poor AI Lab! You are dying and I can't save you.'"

> **"In response to the demise of MIT's AI Lab, Stallman founded the GNU project."**

Just a hobby

In response to the demise of MIT's AI Lab, Stallman founded the GNU project, the Free Software Foundation, and the GPL (General Public License) under which the majority of free and open source software is released. The aim of the GNU project, created in September 1983, was to create an operating system, from scratch, that was totally free.

"The only reason we have a wholly free operating system," Stallman said, "is because of the movement that said we want an operating system that is wholly free, not 90 per cent free. If you don't have freedom as a principle, you can never see a reason not to make an exception. There are constantly going to be times when for one reason or another there's some practical convenience in making an exception."

Nine years later, Linus Torvalds announced the arrival of Linux to the comp.os.minix usenet group: "I'm doing a (free) operating system (just a hobby, won't be big and professional like GNU) for 386(486) AT clones."

The origins of the culture that gave rise to Linux and Free Software can be traced back directly to the AI Lab and The Hacker Ethic. Stallman's special contribution has been to raise awareness of the legal and proprietary obstacles to the free distribution of software and ideas. The universal language of contributors to open source projects (and the software industry in general) has been influenced by the philosophy and politics of Stallman's writing. In particular, his insights into the laws surrounding software copyrights and patents are a continuation of The Hacker Ethic that "access to computers – and anything that might teach you something about the way the world works – should be unlimited".

The important design issue

The success of the open source development model of free software, a direct descendant of the AI Lab's hacker culture, has transformed the way that software development is approached by the computer industry. The success of GNU/Linux, *Apache*, Perl and other open source projects has opened up the entire process of software development to a more challenging and exciting future.

The four freedoms

Richard Stallman defined free software as "a matter of the users' freedom to run, copy, distribute, study, change and improve the software." More precisely, it refers to four kinds of freedom for the users of the software:

0 **The freedom** to run the program, for any purpose.
1 **The freedom** to study how the program works, and adapt it to your needs. Access to the source code is a precondition for this.
2 **The freedom** to redistribute copies so you can help your neighbour.
3 **The freedom** to improve the program, and release your improvements to the public, so that the whole community benefits. Access to the source code is a precondition for this.

Stallman: actually talking sense!

Photo: Thane Plambeck

Bill Gosper, one of the original AI Lab hackers.

Organisations as diverse as Intel, Novell, NASA, Sun Microsystems and IBM have not only contributed ideas and software under the GPL and its variants, but have also participated in free software projects to their mutual benefit, the benefit of their users and the wider benefit of the community. Their motives haven't always been altruistic, but the effect has been the same. Free/Libre and Open Source Software (FLOSS) has become the default approach to software development across many industries, and this is changing the way data and information is viewed and shared by organisations and individuals. Companies participate for selfish reasons, because it works, and because it brings twice the resources at half the price. Others participate for a number of reasons and some, like Linus Torvalds, become involved purely for fun. "The most important design issue," Torvalds wrote in 1995, "is that Linux is supposed to be fun."

Evolution and revolution

The open source model, as it has evolved across the web, is creating a new set of rules for technological development. There's nothing that says this model can only apply to software. The informality of the open source model, and its ability to enable participants to find their own level, encourages innovation beyond the reach of commerce. The crucial factor is that all development is subject to peer review by other hackers. The central principles that produce good software depend on sound design, and sound design is enhanced by the scrutiny of your peers – a principle that's recognised throughout the sciences. Scientific development evolves from a common pool of knowledge (similar to the one that open source computer code provides) in which new developments are built upon shared knowledge of what's gone before. Open source software development can be seen as an adaptation of a traditional process.

The Hacker Ethic also helped to define the early culture of the web. As Tim Berners-Lee said in *The World Wide Web: A Very Short Personal History*: "The dream behind the web is of a common information space in which we communicate by sharing information. Its universality is essential: the fact that a hypertext link can point to anything, be it personal, local or global, be it draft or highly polished. There was a second part of the dream, too, dependent on the web being so generally used that it became a realistic mirror (or in fact the primary embodiment) of the ways in which we work and play and socialise. That was that once the state of our interactions was online, we could then use computers to help us analyse it, make sense of what we are doing, where we individually fit in, and how we can better work together."

In commercial terms, open source software development is revolutionary because it has encouraged businesses to realise that there are advantages in collaboration and in pooling research and development – a fact that's been taken on board with startling effect in the animation, special effects and biotech industries.

> "The Hacker Ethic also helped to define the early culture of the web."

The existence of free software has broken down barriers of entry and made it possible for small startups to become engaged, whether it's by plugging into and developing existing open source projects, providing support and added value, or initiating new projects that draw on wider resources. Another attraction of the open source principle is that it opens up technology to those who wouldn't otherwise have access to it. George Bernard Shaw sums it up: "If you have an apple and I have an apple and we exchange apples then you and I will still each have one apple. But if you have an idea and I have an idea and we exchange these ideas, then each of us will have two ideas."

Steven Levy, the man who first probed hacking's soft underbelly.

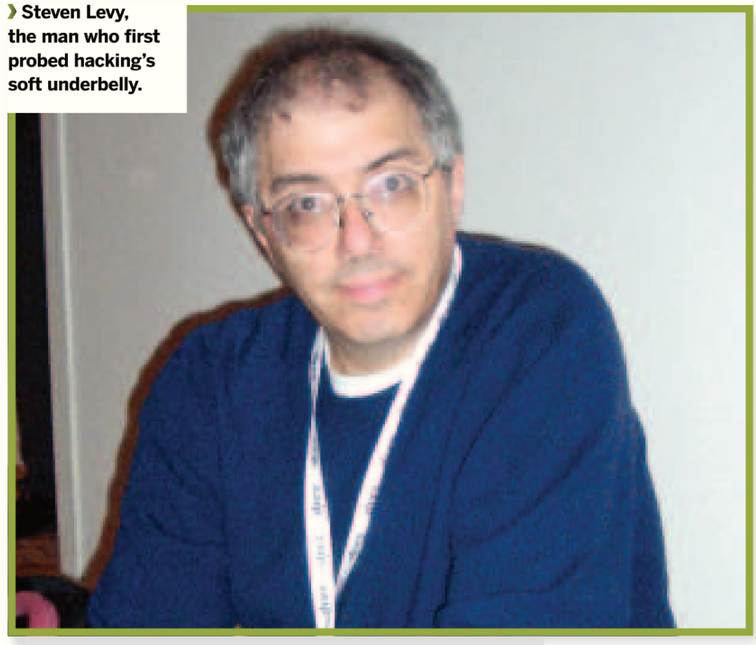
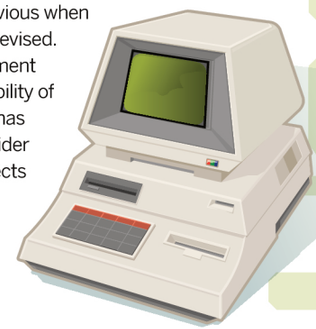


Photo: Cory Doctorow

Freedom of information

The principle that "information wants to be free" has not only influenced the growth of free software and the web, but it provides a contrast to the tyranny of patents and perpetual copyright, which help to keep knowledge and power in the hands of corporations. The values of freedom and co-operation that the GPL facilitates, and the collaborative methods it encourages, have opened up the world of software to any number of possibilities, not all of which were obvious when the GPL was originally devised.

The FLOSS development model (and the accessibility of ideas that it promotes) has clear attractions for a wider variety of projects: projects that go beyond programming and beyond the narrow confines of computer systems software. LXF



LINUX FORMAT On the DVD

» A few of these apps are proprietary, so we can't put them on the disc – see the Indispensible section for a full list.

If you're new to Linux, you'll be amazed at the wealth of free software included in your distro by default – and you'll be even more amazed when you realise that there's even more out there. **John Brandon** gives us his top 20 indispensible apps...

Graphics

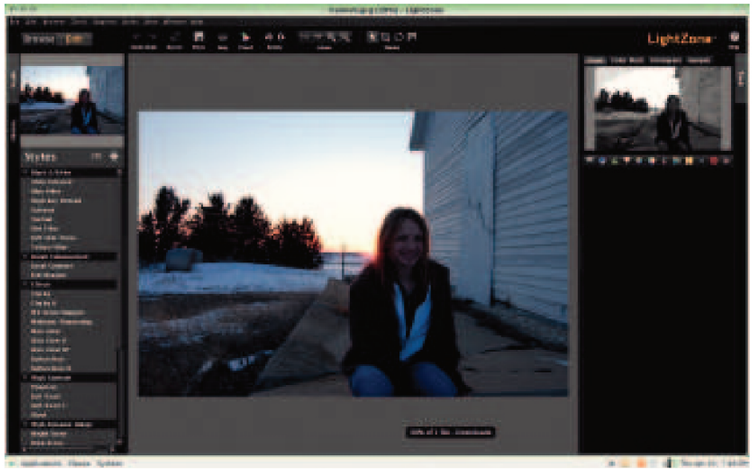
LightZone 3.4

www.lightcrafts.com/linux

This powerful photo editing tool enables you to adjust the lighting attributes for any photo. Its main strength is that it uses a 'smart' editing design, in which there's typically one slider to adjust exposure settings, high dynamic range light sources, add sepia tones and make hundreds of other tweaks to a photo to improve it – or just make it look more creative.

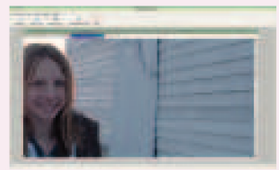
With dark photos, *LightZone* works wonders by enhancing the tones in the photo and brightening every pixel without giving the photo a washed-out look. The beta is free to try, but the final download package costs £100.

› ***LightZone*** **works according to Ansell Adams' theories of light and shade.**



Qtfpsgui

qtpfsgui.sourceforge.net



Long-time Linux users know that the key advantage to the operating system is that a programmer can decide to make one particular tool – usually something he or she needs in a toolbox – and release the application into the wild. *Qtfpsgui* is just such a tool. It enables you to experiment with high-dynamic range lighting in a photo or 3D image that might be used in a game or 3D world. The options for controlling HDR lighting are simple: adjust a slider for gamma correction, load a tonal mapping tool to adjust light sources and other variables. Then, save your work for modelling in a 3D world.

Hugin

http://hugin.sourceforge.net

Experimenting with photography can lead to some wondrous results. *Hugin* is a panorama photo editor that can stitch your photos together. The process works like this: when taking photos, you position the lens for each successive shot so that the right side of the current photo lines up with the left side of the next photo – you turn to the right each time you take a new shot. You don't have to be exact, since *Hugin* can stitch the photos together quite well, although a tripod certainly helps.

Multimedia

Renoise

Don't miss!

www.renoise.com

Far beyond the simple mechanics of recording a sound, making an audio clip and sharing it with the world, this powerful music production studio is intended for those who want to adjust the fine frequencies of each audio track in a new composition, and don't want to get bogged down with the 'happy palette' approach of a tool such as *Apple Logic Pro*. Even though it runs on Linux, it supports the VST instrument libraries that began life in Windows.

There's a built-in sampler that enables you to create unique sounds, then add them to your audio timeline. A pattern editor helps you take those new sounds and make a recurring sequence. Sliders for mixing the music (panning left or right, adding EQ and changing the volume) help you created the finished work.

Alexandria

linux.softpedia.com/get/Desktop-Environment/Tools/Alexandria-3488.shtml

If your office library is overflowing with books, try *Alexandria*, a cataloguing utility that makes it easy to scan through book covers, track which books you have loaned out or those you might need to discard because they're just taking up space. A good source for book covers is **Amazon.com**, but be sure to click the image for the larger version. Then, just save it to a folder and load the image into *Alexandria*. You can search quickly for book titles and authors, but the main purpose of *Alexandria* is just helping you remember which books you own and which one you want to read next.

Jokosher

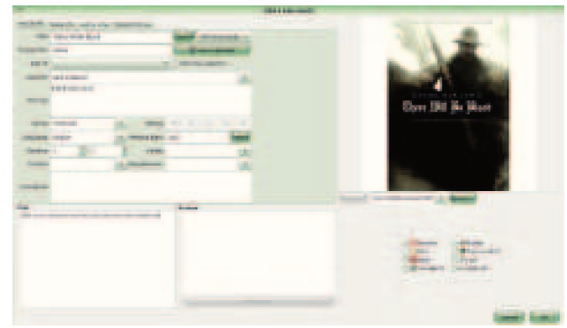
www.jokosher.org

Most Linux users already know about *Ardour*, the powerful (but slightly confusing) multi-track audio recorder. (We're not ready to call it a digital audio workstation quite yet.) *Jokosher* is a much more streamlined track recorder for those who want to record their own demo tapes. It has few features for creating loops or using files generated from a piano connected to your PC, but it does enable you to add audio files directly into the same interface in which you're recording live instruments.

CeeMedia Movie Catalog

ceemedia.sosdg.org

Like *Alexandria*, the single-purpose utility program *CeeMedia* is – as the name implies – a cataloguing utility for the movies you either own or have seen (or want to see). It's an intriguing program because it enables you to add a large amount of detail about each movie, including cast and crew, a plot summary and even a mini-review. We think a good next step in the development of *CeeMedia* would be to form some kind of social networking feature, so users can exchange movie ratings and reviews – similar to what **Flixster.com** does today. As it stands, *CeeMedia* is essentially a front-end database for all your video entertainment and it excels at that very specific function.

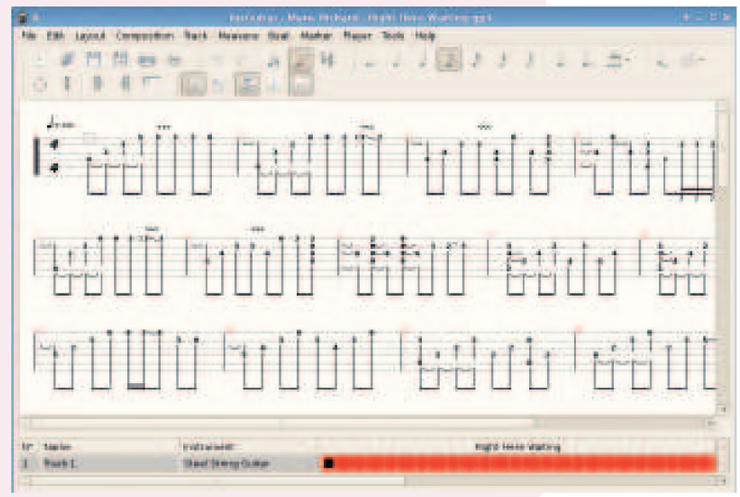


TuxGuitar

www.tuxguitar.com.ar

Creating tabs for guitar – the notes and instructions that help other guitar players learn the song – can be a difficult task. Usually, it requires using a font in *OpenOffice.org* and hand-drawing the tablatures, or using an expensive music composition program that provides a hundred features in addition to basic tab creation.

TuxGuitar is just for making tabs: it dispenses with any kind of linear sequencing and recording features and provides a way to make the tabs for any song. You can adjust tempo, note duration, signatures, triplets, and add effects such as tremolo and bends to the music.

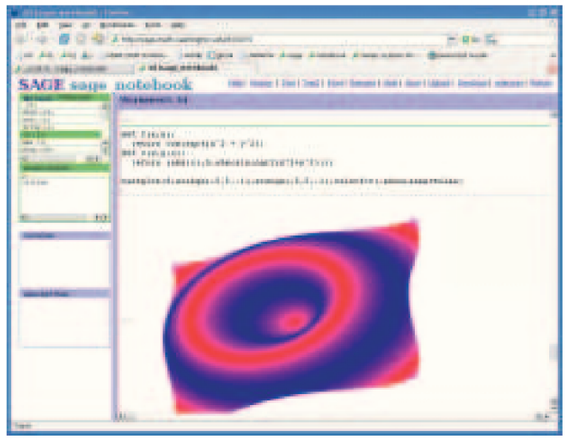


Productivity

Sage

www.sagemath.org

Wolfram Research's *Mathematica* is still the clear leader in "scientific computing" software for end users and the education market. The program costs several thousand dollars and there's a Linux version available, but you can get by just fine with *Sage*, an open source equivalent. We found *Sage* to be a little complex to install: it wouldn't even work with one of our Ubuntu laptops and has a few unheralded dependencies, such as *Latex*. Once *Sage* is up and running, the tool has a number of features for analysing advanced theories, cryptography and calculus. There's an online demo for *Sage* that enables you to try the software before installing it at **www.sagenb.org**.



› ***Sage*: open source maths software for when *OOo Calc* just won't cut the mustard.**

Dia

www.gnome.org/projects/dia

Like the more mainstream drawing tool *Visio* (which runs only in Windows), *Dia* is designed for basic flow-charts to make a point about a complex problem or plan. It's a little more freeform than *Visio* because it doesn't quite have the same stock library of icons and pictures. The basic drawing apparatuses are all here: arrows to point out the decision tree, several shapes to add to the diagram and annotation features with support for many fonts and formatting treatments. The program shines brightest when you use it for UML (unified modelling language) diagrams that show how an application development will progress, and adding colour to these utilitarian drawings can liven them up. *Dia* has good community support, but we think they should be up to a version 1 by now.

VariCAD 2008

www.varicad.com

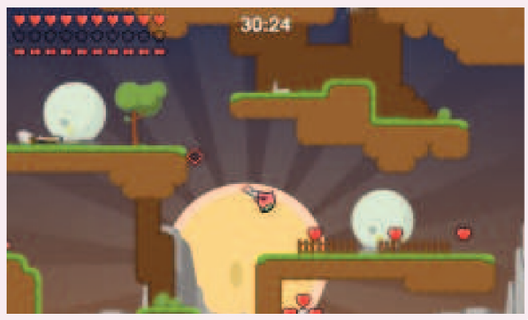
Complex CAD programs usually cost an arm, a leg and a spleen, but *VariCAD* is a stark departure from the usual pricing schemes, which typically run into the thousands. For about £300, the program mirrors the features found in *AutoCAD*, supporting many of the same file formats, such as STEP and DWG, and vast libraries of existing objects (most designed for mechanical engineering). It also has an interface that tends to put every icon and option right on the main screen, where they're just a click away. This is helpful for serious designers because it means no hunting around for that one hexagonal pen tool.

Diversions

TeeWorlds

www.teeworlds.com

Who says a shooter has to be bloody and violent? *TeeWorlds* is a cross between *Quake* and *Joust* (a match made in heaven), in which you run around a platform-jumping level shooting other online players. It has power-ups and various above and below-ground maps, objects to impede your path and enable the other players to snipe you from a distance, and cartoon-ish graphics. This game – which used to be called *TeeWars* – is now open source; originally it was a more commercial endeavour. It's also highly addictive; a unique game that blends two unique gameplay styles.



The Sims Carnival

www.simscarnival.com

We've included one online game portal to show that there are hundreds, if not thousands, of games available to the Linux community from a browser, regardless of whether they make a Linux version. One of the newest is The Sims Carnival, which features a slew of arcade games, puzzles and even adventure games. What's most interesting about Carnival is that other users create the games for you to play, so it's an excellent introduction to the fundamentals of programming: gameplay, graphics, design, testing.

Cuyo

www.karimmi.de/cuyo

This *Tetris* knock-off works because it's so simple and finally dispenses with the 3D bricks. In their place, *Cuyo* presents cartoonish smiley faces that plunge down into a grassy knoll. In later stages, the game gets horrendously difficult as you try to colour-match the characters and form a chain of faces, some of them falling at different rates, others causing nearby faces to explode. Another twist is that you sometimes have to form a row of smiley faces diagonally before they'll explode and sometimes a descending smiley will change colour, so you have to be quick to react to the new variables.

Stellarium

Don't miss!

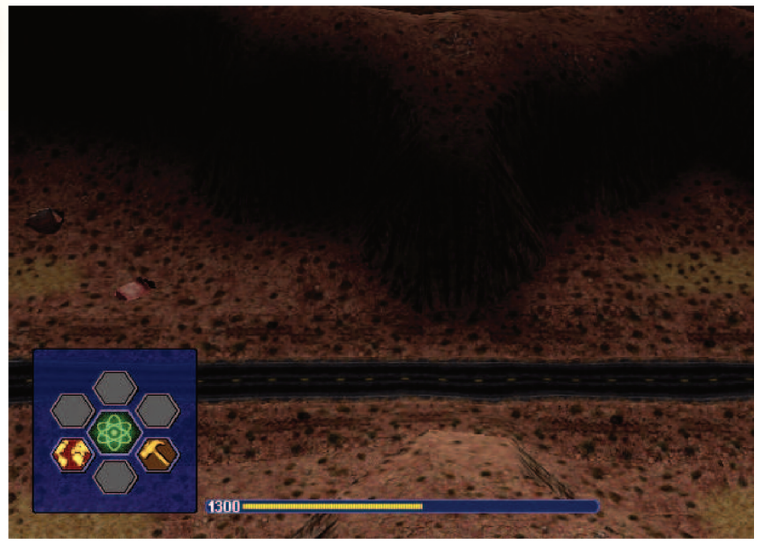
www.stellarium.org

Google is well-known for making sky-mapping software *Google Sky*, but *Stellarium* is an open source equivalent that's gaining traction with good community support and an interface that emphasises stargazing over traditional (and complex) planetarium features, such as azimuthal grids and scripting coordinates. The program actually has most of the features in *Google Sky*, including the star grids – which enable you to find as many as 600,000 stars – but first it just shows you a wide open perspective of the sky to encourage creativity and experimentation.

Warzone 2100

www.wz2100.net

Warzone 2100 is based on a real-time strategy game developed by Pumpkin Studios way back in 1999. In 2004, the giant publishing house Eidos Interactive released the source code into the public domain and *Warzone 2100* was born. Gameplay follows the traditional mechanics of *Command & Conquer*, with heavy resource building and gang-rush tactics, using a graphics engine that's definitely showing its age. Yet *Warzone 2100* is free and has a much deeper tree structure – with as many as 400 technologies to research and a branching unit customisation structure, three campaigns and 24 instant action maps.



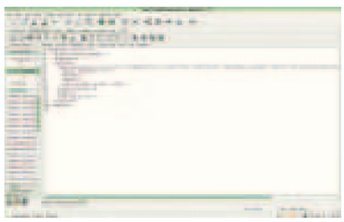
Typically, the baddies seem to have run away in this *Warzone 2100* screenshot.

Development

Bluefish

bluefish.openoffice.nl

Freshly minted as a version 1.0 product, *Bluefish* is a powerful text editor for programmers. Billed as "extremely lightweight", the program uses about half the memory of more well-known editors, such as *Quanta*, so it could run just fine in a lightweight distro – for example, Fluxubuntu – or alongside programming environments such as *Eclipse*. It also loads files quickly: in a test, we opened ten HTML files in almost the blink of an eye, even though they were fairly complex.



Salasaga

www.salasaga.org

Even though Adobe has recently opened up with its Labs initiative and supports Linux with more and more of its utility computing products (such as *Flex* and the Air platform), it's still nearly impossible to find versions of its main productivity apps that runs on Linux, such as *Dreamweaver* or *Fireworks*. *Salasaga* makes up for this deficiency by enabling you to make animated Flash movies using the native SWF format, and will eventually support Ajax for fully interactive content in a web browser.

Octave 3

www.gnu.org/software/octave

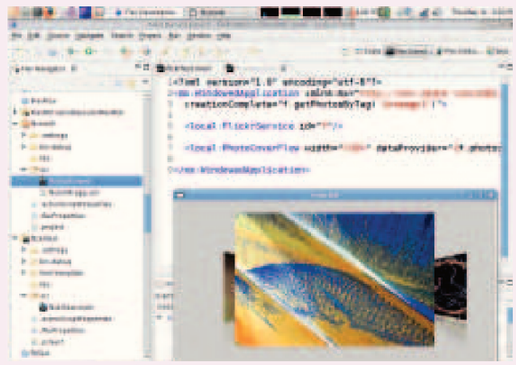
This development platform is intended to aid programmers with computational problems – including non-linear equations and polynomials, working with differential-algebraic equations and other complex maths problems – through its own custom-built programming interface. The main improvement in version 3.0 is better interoperability with *Matlab*, the data analysis and visualisation tool that helps programmers with complex workflows in high-end computing development.

Adobe Flex Builder Public Alpha

Don't miss!

www.adobe.com/products/flex

Finally! This development framework for *Eclipse* – it works as a plugin – enables you to create web apps without even being connected to the web, like *Google Gears*. The emphasis is on easy scripting to develop a rich Web 2.0 app as quickly as possible, using the highly portable MXML language, intuitive UI design tools and support for open standards. LXF



Over to you...

Have you found an app that you can't live without? Have you tried any of the above and found that they don't float your boat? Either way, we want to know about it. Send your indispensible apps to **lxf.letters@futurenet.co.uk** or post your findings on the LXF Forums at **www.linuxformat.co.uk**.

What on Earth is... Akonadi

Where's that email? What's your boss's phone number? When's the next project meeting? **Marco Fioretti** explains why *Akonadi* knows all this and more.

Is *Akonadi* another stupid KDE name chosen only because it has a K in it?
Absolutely not! Akonadi is the name of the oracle goddess of justice in Ghana, and was chosen because all the other candidates were already being used by other projects. No, really!

So what is it?
The new, unified PIM data management service of KDE 4.

What does PIM mean, again?
Personal Information Management. In this context, 'Personal Information' means all those kinds of data that are either created by your personal communications or needed in order to keep your relationships and day-to-day activities under control: from email messages to address books, calendars, events scheduling and to-do lists. 'Managing' all this stuff doesn't just mean keeping ordered, searchable archives of everything. A typical PIM also includes many semi-automatic actions such as alias managements, avoiding schedule conflicts when inviting co-workers to a meeting – or popping up a reminder window when it's your wife's birthday!

> **"Akonadi provides a way to read, search or write all kinds of PIM data."**

But KDE already has this: I use *KMail* and *Kontact* every day!
Yes, but the PIM components of KDE 3 are standalone programs with independent, partly redundant mechanisms to manage and store data. This causes several problems that *Akonadi* should solve for good.

Which problems, exactly?
First off, performance: to show today's calendar, *KOrganizer* must load all registered events, just as *KAddressBook* loads all your contacts even when you only want to see some of them. This isn't a problem on a personal desktop, but as soon as you try to connect to the groupware server that lists all the other 10,000 employees of your corporation, speed goes down the tube. This is due to both the overall architecture and to code duplication in the current libraries.

What are the other problems?
Lack of support for asynchronous access from different applications and for notification of changed data. The first can lead to data corruption if two apps try to update the same record at once. The second means that if you update an email address in your address book, your email program may not see the new value until you restart it.

How does *Akonadi* solve these problems?
It provides a unified way to read, search or write all kinds of PIM data and metadata, by means of an architecture that natively supports concurrent access, notification and powerful searches. Despite that, it's not a server; *Akonadi* is mainly a kind of centralised cache for all the data, with a common, asynchronous interface to access it. The real data remains stored somewhere else in the filesystem in its native formats, such as Maildir for email or iCal files for calendars.

How does this solve the problems above?
If there's just one cache, data only needs to be held once in the memory and, as soon as it changes, all the clients immediately see the new values. At the same time, having one advanced interface for all kinds of queries enables desktop applications to request only the data that they really need, and so can work faster.

Having one asynchronous interface to the cache also means that data can be accessed without ever freezing the UI of several clients.

I'm a home user with plenty of memory in my computer. Do I still need *Akonadi*?
If you make heavy use of *KMail*, *Kontact* and friends, probably yes. *Akonadi* could sensibly reduce the average memory requirements of your desktop, and this is never a bad thing. In addition, Akonadi could make many other activities easier, from syncing calendars and address books with remote servers or mobile devices to integrating your PIM system with sophisticated desktop search programs.

OK, let's figure out how it works, then. What's inside *Akonadi*?
Akonadi consists of four major components: an external data storage for all PIM data and its related cache, a notification manager, some search providers and an API (Application Programming Interface) library. Each component is a separate process that can be restarted independently from the others, in case it crashes or hangs.

Can other applications access the stored data independently from *Akonadi*?
Strictly speaking, yes, because the data will still be stored, in standard formats, inside files that can be accessed by lots of other software. It's not guaranteed, however – at least in the first releases of the system – that *Akonadi* will be able to cope with such interferences. Akonadi also use a notification manager to inform all the programs connected to *Akonadi* whenever a PIM object in the cache is modified, added or deleted, and 'search providers', which are external utilities that perform the actual filtering on the data storage on behalf of other programs.

Is there anything else?
Yes: you can have so-called 'agents' and 'resources'. The first are plugins that run as separate programs to process data in the *Akonadi* storage. Resources are plugins that connect the same storage with external sources, such as groupware servers.

This sounds pretty complicated. How will a non-programmer be able to check if everything in *Akonadi* is working correctly?
The *Akonadi* bundle should include a system tray utility that will enable you to at least stop or start *Akonadi* and check its status. Eventually, this icon will also be able to display error messages from any *Akonadi* resource.

Wait, we forgot the library!
Right! The library's purpose is to make all this happen: to make it possible for other programs to talk with *Akonadi* in a relatively high-level language (in the style of *Qt* libraries) and in a platform neutral way.

The library, predictably called *libakonadi*, can be used either by desktop applications such as *Kontact*, *KOffice* or *Evolution*, or by other services that transfer data to or from *Akonadi*.

Is *Akonadi* only for KDE?
Theoretically, no: every software program can use it. *Akonadi* is proposed, for example, as a replacement for the Evolution Data Server (EDS). In practice, while the core components will not depend on KDE or *Qt*, *libakonadi* will need the latter library. This dependence, and the dependence on a database server, may limit how popular *Akonadi* will become outside KDE.

What are the advantages of using *Akonadi* for (non-KDE) programmers?
Akonadi provides advanced ways to retrieve, display and modify PIM data to any program that needs to manage such data. This can make writing applications much easier. As an example, the developers of *Mailody* – another KDE mail client – were able to create a basic mail viewer in ten minutes, thanks to *Akonadi* (see **www.omat.nl/drupal/creating-mail-reader-10-minutes**).

You hinted that *Akonadi* could be integrated with sophisticated desktop search programs...
That's the eventual goal, yes. To get there, *Akonadi* will probably partner with *Nepomuk* (**http://nepomuk.kde.org**), the KDE version of semantic desktops. The first level of integration will be replacing the categories for data classification provided by the current KDE PIM programs with *Nepomuk* tags. After that, it will be possible to write custom agents that will automatically feed data in the *Akonadi* cache to *Nepomuk*, so they can be properly indexed.

Eventually, this coding frenzy will bring you things like virtual email folders, which are the result of complex live *Nepomuk* searches. You should be able to ask your *Akonadi*-compatible email program to display all and only the messages that contain picture attachments, those that were sent by someone who participated in events tagged with 'KDE-PIM' or even perform fuzzy queries such as finding all the messages more or less directly related to a given topic.

Another possible outcome of *Akonadi*/*Nepomuk* communications may be the integration of PIM data into other, non-PIM KDE applications: imagine having your colleagues' picture or phone number displayed by your file manager, besides their home directories...

I almost forgot: since we're thinking about email, calendaring and address books, will *Akonadi* be compatible with *Exchange*?
At the moment, there are people working on a resource enabling access to *MS Exchange* via the OpenChange MAPI library (**www.openchange.org**). This is a separate project that aims to provide an open source implementation of *Microsoft Exchange* protocols under Unix and Linux.

When will it be ready?
KDE 4.1, which is planned for July 2008, will include *Akonadi* as a developer platform. This means that the APIs will be stable and the service usable, but not all PIM clients may make full use of them yet: for this, you'll have to wait for KDE 4.2. In any case, you should be able to test *Akonadi* quite soon now! LXF

Dr Brown's Administeria

Dr Chris Brown
The Doctor provides Linux training, authoring and consultancy. He finds his PhD in particle physics to be of no help in this work at all.

Esoteric system administration goodness from the impenetrable bowels of the server room.

The Hardy Heron hatches

By now you'll probably have read our review of Ubuntu 8.04 LTS on page 22. This is a significant release for Canonical, because the LTS stands for "long term support" which means they have committed to support it for three years on desktops and five years on servers.

The previous release to have the 'LTS' label was Ubuntu 6.06, which first saw the light of day almost two years ago. The new release continues the now-established alphabetical sequence of silly alliterative names and is called "Hardy Heron".

Hardy admins

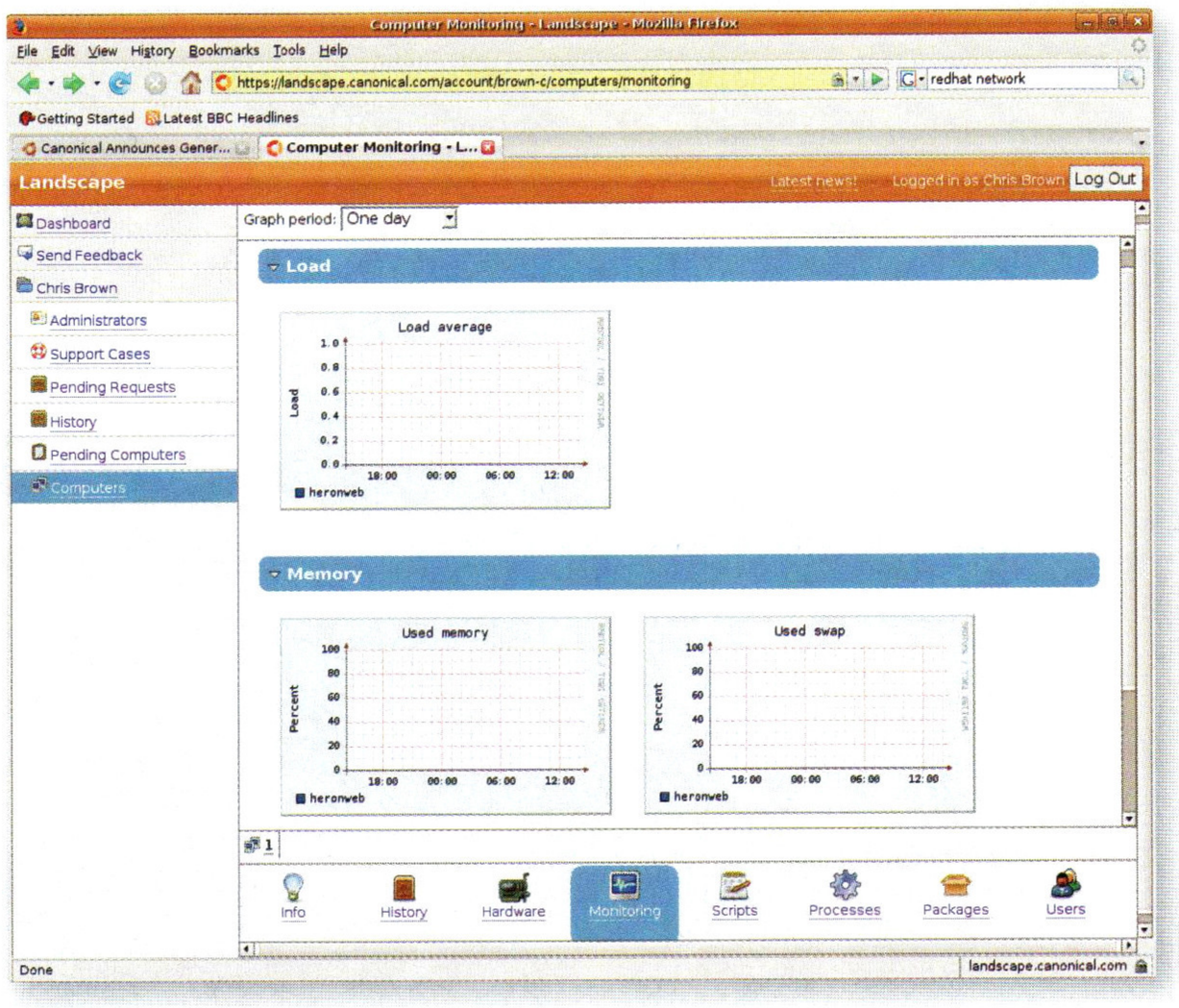
There are several bits of new technology in Hardy Heron of interest to system administrators. *X.org 7.3* promises better automatic configuration and a new screen resolution utility for adjusting the resolution and refresh rate for external monitors and projectors. (I'll be interested to see how well this works myself, as I've had all kinds of grief in the past getting Linux laptops to drive external data projectors properly.)

Canonical has given the Hardy Heron the usual upgrades to the kernel as well as fresher versions of key software, but the most intriguing addition is something called PolicyKit. This is a framework for performing fine-grained "privilege escalation" that makes life easier for desktop users performing specific administrative tasks. If I understand it right, PolicyKit is intended to replace *sudo*. There's Likewise Open, an open-source application that supports user authentication on Linux against an Active Directory on a Microsoft network. Virtualisation is supported through *KVM*. And there's a new tool called *UFW* (uncomplicated firewall), that makes it easier to configure a host-based firewall.

Get the big picture

Landscape System management and monitoring now in a friendly webmin package.

Canonical recently announced the general availability of a web-based system management and monitoring tool for Ubuntu systems called *Landscape*. It's intended to compete with Red Hat Network, and is the latest of several signals that Canonical has sent out over the year that it's serious about getting into the server and enterprise market. *Landscape* is a subscription service, but you can sign up at **www.canonical.com/landscape/register** for a 60-day free trial, if you have five or more machines to register. Once signed up, you need to download the *Landscape* client package on to each machine you want to manage, then register it with the service. Registered clients regularly 'report in' to the Landscape server to report their status. The screenshot shows one of the several browser-based reporting screens available – this one shows CPU and memory load. From the browser interface, there's a facility to run arbitrary scripts on any desired set of the managed machines, and there's also a screen to log and manage support requests from Canonical's tech support.



› ***Landscape*** **allows remote monitoring of CPU and memory load, hardware and software inventory, running processes, and user accounts.**

The magic of SysRq

Getting the kernel's attention in a hurry, or why Raising Elephants Is So Utterly Boring.

The next time you're within reach of a friend's Linux box, try the following experiment: hold down the Alt and SysRq keys and type B. If necessary, step back, look surprised, and say: "That's strange – your machine seems to have spuriously rebooted". In fact, you have just witnessed the wonder of the Magic SysRq Key.

The name Magic SysRq key always has a slight suggestion of fantasy for me – as if it were something that Bilbo Baggins might find in a cave. In fact, it's a set of hot-key combinations that can be used to get the attention of the kernel in a hurry.

The table shows some of the commands available via the Magic SysRq key. Remember that you have to hold down Alt and SysRq at the same time for these to work. If you want to experiment, I should warn you that the kernel's response to these keys is brutally abrupt. Don't do any of these things if you have unsaved edits lying around! Also, you might have to experiment a bit to get the right hot-key combinations. For example, I have a Microsoft keyboard with a key marked 'F Lock'. This needs to be turned off for the SysRq key to work. On a laptop, you'll likely have a key labelled 'Fn' that may or may not need to be held down to make the SysRq key work, so you might end up with a four-key combination like Fn+Alt+SysRq+B.

Hold Alt + SysRq + one of these...

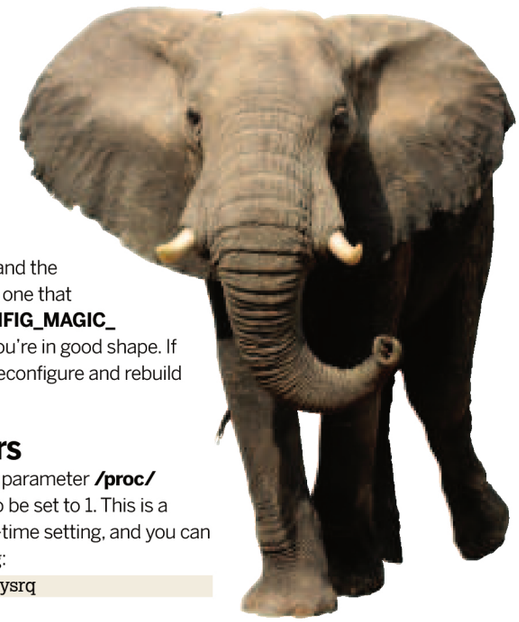
Key	Action
0–9	Set the logging level, which will affect the amount of output generated by the M and P commands, for example.
R	Switch the keyboard into XLATE mode.
E	Send the SIGTERM signal to all processes except init. Applications are expected to respond to this signal by cleaning up and terminating gracefully.
I	Send the SIGKILL signal to all processes except init. This will forcably kill all processes.
S	Sync all file systems (ie flush buffered data to disk).
U	Remount all file systems in read-only mode.
B	Immediately reboot.
O	Shut down the power.
M	Output memory usage statistics to the console.
T	Output task list to the console.
H	Display brief summary of all SysRq keys.

Yes, but why?

You may be wondering what use this might be. Well, I'd be the first to admit that it's probably not something you'll need every day. I have used it in the past to simulate a system failure (this was to test failover of a high-availability cluster). I have no doubt that if you're a kernel guru you can glean useful information from the task list and memory statistics that T and M give access to.

If your system really seems to have hung, it may give you a more graceful way of rebooting than forcibly recycling the power. The recommended key sequence for this is R > E > I > S > U > B (switch keyboard from raw mode, send SIGTERM to all process in the hope that they'll terminate gracefully, send SIGKILL to all processes in case they didn't, flush all mounted file system buffers to disk, remount filesystems read-only, reboot). The way to remember this, apparently, is through the acronym "raising elephants is so utterly boring"; or you may prefer to remember that it's 'busier' backwards. For best results, wait a few seconds between each key press.

If you can't get the Magic SysRq keys to work on your system, there are a couple of things to check. First, your kernel must be configured with the feature enabled. You can figure this out by examining the copy of the kernel configuration file that your distribution (hopefully) provided for you in the **/boot** directory. The file will probably have a name along the lines of **config-2.6.18-something** and the line you're looking for is the one that defines the parameter **CONFIG_MAGIC_SYSRQ**. If this is set to 'y', you're in good shape. If it's set to 'n', you'll need to reconfigure and rebuild your kernel.



Kernel parameters

Second, the runtime kernel parameter **/proc/sys/kernel/sysrq** needs to be set to 1. This is a runtime setting, not a build-time setting, and you can change it dynamically using:

```
echo 1 > /proc/sys/kernel/sysrq
```

or

```
sysctl -w kernel.sysrq=1
```

or, if you want the change to be permanent (i.e. to survive a reboot) place the line

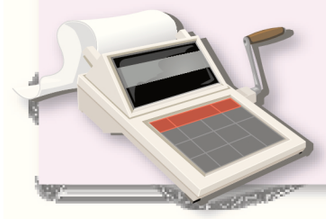
```
kernel.sysrq=1
```

into the file **/etc/sysctl.conf**.

I just checked the systems I have to hand right now and on Ubuntu 7.04, 7.10 and 8.04 the Magic SysRq key is enabled by default. On Fedora 7, it's configured into the kernel but disabled in **/proc/sys** (which seems like a safer default to me).

The VAT man cometh

I had the VAT inspector round the other day. Nice chap. In describing how I earned my living, Linux was inevitably mentioned. I asked if he'd heard of it. "Oh, yes", he said, and I was duly impressed and encouraged. But then he rather spoiled the effect by saying, "It's a programming language, right?"



Back to basics

The first rule of system administration is that you do not talk about system administration. The second rule is that you must back up like a ninja.

Disks are pretty reliable these days, and it is easy to become complacent that the data they store is guaranteed to be indefinitely available. It takes some sort of disaster to make us really wake up to the ephemeral nature of the information that our computers are storing, and there's a sort of joke that there are two kinds of system administrators in the world – those who do regular backups, and those who wish they had. In the last 10 years I have personally suffered two hard disk failures. The most recent was in our Sky HD box, which perhaps doesn't count. The other was in a laptop. But I have known others, including a memorable incident where a toddler decided to unplug his father's external USB drive and put it down the toilet. Lovely.

> **"In the last 10 years I have personally suffered two hard disk failures."**

Over the years I've used a variety of backup solutions. In my previous (pre-Linux) life, I used two programs called *dump* and *restore*. We used to write the dumps to half-inch 800bpi magnetic tape (this would have been around 1977). The important thing about *dump* and *restore* is that they handled incremental backups. You started with a 'level 0' dump that had everything on it. Next day you did a 'level 1' dump that had just the new stuff since the previous level 0, and so on. This incremental behaviour is of great benefit for backup tools, because most of the filesystem doesn't change from day to day, so you make great savings in time, bandwidth and backup media.

A living fossil

Astonishingly, these two ancient programs have survived into present-day Linux (see **dump.sourceforge.net**). Now, *dump* and *restore* don't work like most programs. They don't access a file's data by using regular system calls; they open the disk partition device (such as **/dev/sda1**) and deal with the filesystem structure directly. This has some important implications. First, *dump* and *restore* only work with ext2 and ext3 filesystems. They cannot, for example, backup Reiser or FAT32 filesystem images. Second, it is advisable that they are not used on live filesystems – at least not on busy ones. Some administrators unmount the partition before they back it up, others mount it read-only. On busy production servers neither approach may be acceptable.

A third approach, if you're using logical volumes, is to take a snapshot of the volume and back that up. A fourth approach is just to wing it and hope for the best. Since these restrictions are irksome on production machines, *dump* and *restore* have largely fallen out of favour. However, there is one rather subtle benefit of working below the virtual filesystem layer – backing up the filesystem doesn't affect any of the time stamps on the files.

A more popular backup solution, at least for small and medium systems, is simply to use *Rsync* to maintain an up-to-date copy of your file system either on (say) a removable hard drive, or on disk space hosted on a "backup server" on your network, or even – if you have the bandwidth – on disk space provided by your ISP. This approach was described in detail in Juliet Kemp's excellent *Rsync* tutorial in **LXF105**, so I won't discuss it further here.

There is a third tool – *tar* – that is very popular for storing archives (for example, many packages on SourceForge are available as *tar* archives. A useful feature of *tar* is that it can compress the archives. (As a quick test, a compressed *tar* archive of the **/lib** directory on my machine is 90MB; the filesystem itself occupies 262MB. A second test, archiving 400MB of JPEG images, gave less than 1% compression. This isn't too surprising, as these files inherently use compressed formats.

Backups with tar

Though *tar* is widely used for archiving it is rarely used for daily backups because it has no incremental capability – or at least, most people don't think it has. In fact, the GNU version of *tar* has a perfectly good mechanism for creating and restoring incremental archives; it just isn't very well documented on the man page and you have to go to the GNU website to find a proper description. It works by storing additional metadata in a separate file called a snapshot file. Let me illustrate using a miniature example.

Let's suppose I start on 'day 1' with a directory called **mypics** that contains three files:

```
$ ls ~/mypics
caption.jpg  storm1.jpg  sunset1.jpg
```

If I create a *tar* archive of this I'll get all three files in it. It is effectively our 'level 0' backup:

```
$ cd ~/mypics
$ tar cvf /backups/mypics.0.tar -g mypics.snar .
./
./caption.jpg
./mypics.snar
./storm1.jpg
./sunset1.jpg
```

The first argument to tar (**cvf**) is actually a set of three options. **c** means create the archive, **v** means verbose (that is, list the

Six obvious things about backups

1. The most important thing about backups is not that you choose the latest, fastest, super-compresso technology, but that you actually make sure you do them, in some reasonable way, on a consistent, regular basis. Doing backups is a bit like paying insurance premiums – you kinda hope that you're never going to need to make a claim, and the temptation is not to do them at all.
2. Making backups of a filesystem on to the same hard drive that the file system is on is a bit like asking Carla Sarkozy for a date – ie a complete waste of time. Don't do it this way.
3. If you backup on to another machine on your network, keep in mind that if your machine gets hacked, the backup server might too. (There is nothing more reassuring than a ten-foot physical gap between your local network and an external USB drive sitting on a shelf.)
4. If you backup on to removable media, label them!
5. Consider storing external backup media (such as CDs or hard drives) off-premises. I find my next-door neighbours quite co-operative in this. Of course, you are giving them access to all your private data, so you need to trust them (or assume they won't figure out how to access it).
6. Whatever backup method you use, make sure you can actually restore files. Do a 'fire drill' – pretend you've lost some files, then go through the process of recovering them.

names of the files as they are written to the archive) and **f** means 'the next argument is the name of the file to write the archive to'. I am assuming here that **/backups** is a mount point for a filesystem from an NFS server, or perhaps for an external disk drive. The **-g** flag is the interesting one. It tells *tar* to keep a record of what has been archived (and when) in the snapshot file **mypics.snar**. Finally, the insignificant-looking '**.**' at the end of the command is the name of the directory I want to archive; in this case, the current directory.

By day 2 I've added a new file to my directory called **baby.jpg**. I create another archive. It contains only the new file and is our 'level 1':

```
$ tar cvf /backups/mypics.1.tar -g mypics.snar .
./
./baby.jpg
```

I can continue on day 3, creating a level 2 backup like this:

```
$ tar cvf /backups/mypics.2.tar -g mypics.snar .
```

Please be clear that the digits I've put in the output filenames are only for my benefit and in no way control what level my archive will be. That's all handled by the snapshot file **mypics.snar**. As long as I keep updating the same snapshot, each archive will be incremental to the previous one.

OK, now let's assume that for some reason we lost the entire content of the **mypics** directory and need to restore from the backup. I would need to restore each of the levels in order:

```
$ tar xvf /backups/mypics.0.tar -g /dev/null
./
./caption.jpg
./mypics.snar
./storm1.jpg
./sunset1.jpg
$ tar xvf /backups/mypics.1.tar -g /dev/null
./
./baby.jpg
$ tar xvf /backups/mypics.2.tar -g /dev/null
./
./chris1.jpg
```

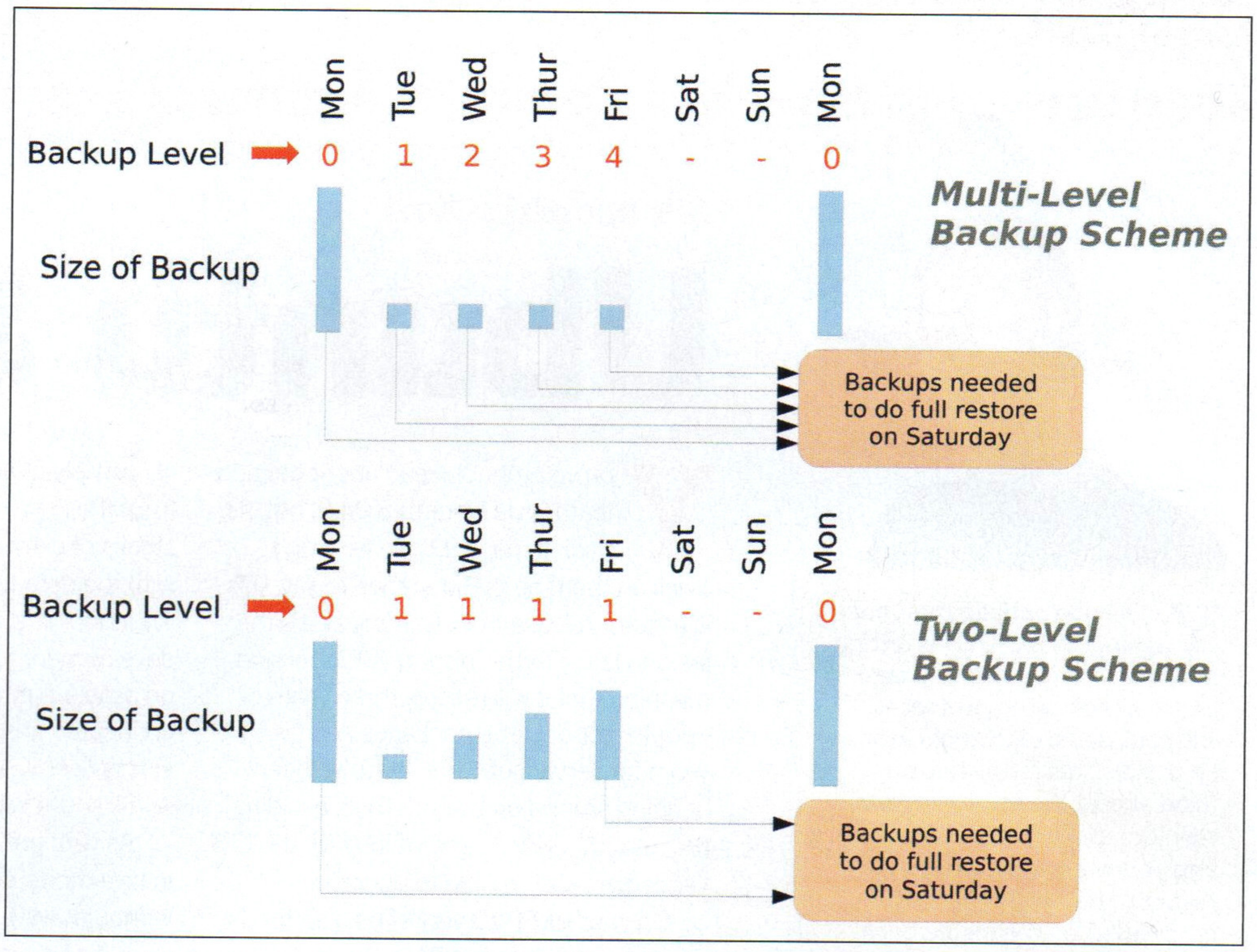
Even when restoring, you still need the **-g** flag to get the incremental behaviour, but in this case it does not actually need the snapshot file. It is conventional to give **/dev/null** as a placeholder argument here, but anything will do. When extracting from the incremental backup, *tar* attempts to restore the exact state the filesystem had when the archive was created. In particular, it will delete those files in the filesystem that did not exist in their directories when the archive was created.

The above scheme creates a new level of backup each day. An alternative scheme might be to do a level 0 archive to begin with, then just a level 1 on each following day. Of course, the level 1's will gradually get larger, but this scheme makes it a little easier to restore from the archive as you only need to keep the level 0 and the most recent level 1. This requires some manual management of the snapshot file. In particular you would need to create a working copy of it to use for the level 1 backup on day 2, and on day three you'd again make a working copy of the original snapshot file to make your next level 1. On day 2 you'd do something like:

```
$ cp mypics.snar mypics.snar-2
$ tar cvf /backups/mypics.day2.1.tar -g mypics.snar-2 .
```

and on day 3 you'd do it again:

```
$ cp mypics.snar mypics.snar-3
$ tar cvf /backups/mypics.day3.1.tar -g mypics.snar-3 .
```



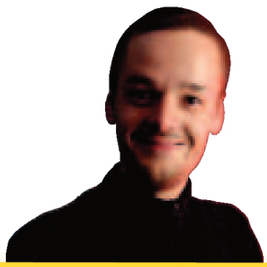
› Two-level and multi-level backup schemes offer trade-off between the size of the backups and the complexity of doing a full restore.

Long term storage

How long do you expect your backup media to last? A month? A year? A decade? A century? Your answer could profoundly affect your choice of backup technology. During the 1980s I encountered several distraught administrators who had their databases carefully backed up on to half-inch magnetic tape but no longer had a computer with a half-inch tape drive. I suppose the equivalent situation now would be the floppy disk. The source code of those key utilities that you carefully wrote to an 8-inch floppy disk in 1977 – how many of you could recover it on to your server now? And if you're tempted to sneer, how long will it be before writer in a magazine is making the same point about "those ancient CDs and DVDs" and joking about how he remembers "those funny old USB memory sticks that only held 4GB"?

Start here

Keep your system up to date with these brand new distros.



You'll have noticed that, once again, the LXFDVD is sitting firmly on the inside back page. We've been having problems with our usual disc duplicator, so the disc currently has no fixed abode. We asked for your opinions on the LXF Team Blog and you were almost entirely in favour of having the DVD in a card wallet on the inside back page – so unless a crisis occurs, that will be its new home.

Mike Saunders
New Media Editor
mike.saunders@futurenet.co.uk

Linux distribution

Ubuntu 8.04

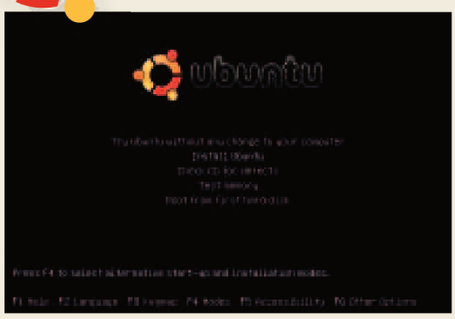
You've probably read about the new features in Ubuntu 8.04 (if not, flip back to page 22), so we won't dwell on them here. But suffice to say, this is a major release from Canonical. It's the second Long Term Support (LTS) version, meaning that it will receive three years of updates for desktop packages and five years for server software. If you've been hanging around on Ubuntu 6.06, avoiding the interim releases and waiting for the LTS version, now's the time to upgrade.

On your **LXF**DVD you'll find a souped-up version of Ubuntu with extra packages galore. Are you an Ubuntu fan, but prefer KDE? Or does *Xfce* rock your socks? Either way, you'll be able to run your favourite desktop straight after installation from our DVD – it's effectively the best of Ubuntu, Kubuntu and Xubuntu rolled into one: you can simply change your choice of desktop from the login screen. We've also added stacks of extra programs that don't come with the default Ubuntu install, such as *Thunderbird* and *Scribus*, along with development tools and libraries. If you're on a dial-up internet connection (or aren't connected at all), we hope you'll find these extras useful. And even if you're on a fast ADSL line, it will save you time and effort.

As with previous releases, Ubuntu runs in Live mode, so you can try the distro without having to install it. If you want to keep it permanently on your hard drive, however, follow the steps below. The minimum system requirements for smooth running of Ubuntu 8.04 are as follows:

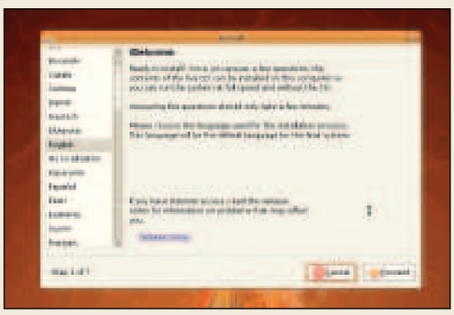
- 800MHz Intel-compatible CPU
- 384MB RAM
- 10GB hard drive space.

Step by step: Install Ubuntu Linux 8.04



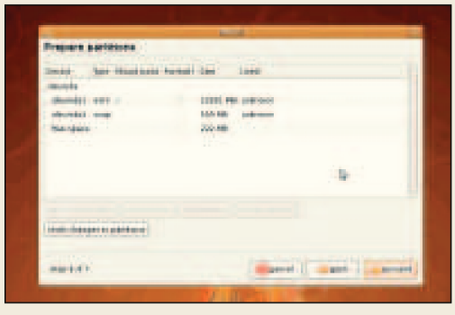
1 Boot

Boot your PC from the **LXF**DVD and, at this screen, use the cursor keys and Enter to select Install Ubuntu. (See page 76 for more information on booting.)



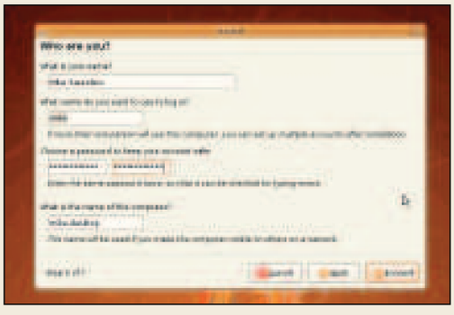
2 Start

After a minute or two, the Installer screen will appear. Read the text and click Forward.



5 Manual

If you choose to partition manually, create a minimum 10GB root (/) partition in ext3 format and a 512MB swap (virtual memory) partition.



6 Account

Next, create a login account at this screen. Don't forget your password, and remember that it's case-sensitive!

Note that the version bootable from our DVD is 32-bit, but will run happily on 64-bit machines, too. Indeed, many 64-bit PC owners stick with 32-bit distros, as they guarantee compatibility with 32-bit software. But if you'd rather maximise the performance of your machine, you can burn and boot the 64-bit ISO provided in the Distros section of our DVD (it's the normal version of Ubuntu, without extras).

New life for old PCs

For those wishing to install Ubuntu on to older machines (128MB RAM minimum), we've also included the 'alternate' ISO image of 8.04. This boots straight into a text-mode installer, so although it's not quite as easy to use as the normal version, it hogs considerably less RAM and enables you to create automated installations on subsequent machines. If you install Ubuntu 8.04 on an older PC, you'll want to avoid the Gnome and KDE desktops in favour of something lighter (such as *IceWM* or *Fluxbox*). You can also use the alternate ISO if you just want to install vanilla Ubuntu, without any of our extras.

The Ubuntu installer enables you to resize hard drive partitions. If you're devoting a whole PC to Linux, you don't need to concern yourself with this; however, if you want to dual boot with Windows, you'll need to free some space on the Windows drive first. Make sure you have at least 10GB of room, then run *Scandisk* and *Disk Defragmenter* in Windows. Before you start the Ubuntu installation, ensure you back up your important data. The installer will enable you to shrink your Windows partition and make room for the new Linux ones.

Hardy Heron is the first Ubuntu release to include *Wubi*, a program that enables you to install and run the distro on a Windows machine without repartitioning your drive. It's a bit slower than a normal installation, and lacks a few features such as disk hibernation, but it's a great way to introduce friends and family to the world of Linux. In Windows, run **umenu.exe** from the DVD to start *Wubi* – note that it's a new feature for the distro, so it's still wise to back up important data first!

If you have any problems installing or running Ubuntu, pop by the **LXF** forums at **www.linuxformat.co.uk/forums**: you'll find plenty of Ubuntu users who'll be willing to help. Or try **www.ubuntuforums.org**, which has a vast range of sections, from hardware support to security. If you want to spread the word and get some discs for friends or colleagues, see **http://shipit.ubuntu.com**, Canonical's free CD distribution service. There'll be a big rush to get the very latest release, so expect some delays in shipping, but you'll receive attractively packaged Ubuntu discs to help with your Linux advocacy. »

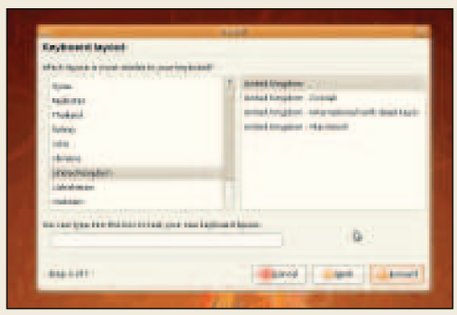
› Ubuntu 8.04 (aka Hardy Heron) includes the scorchingly fast *Firefox 3.0* web browser, which, despite its beta status, is already impressively solid.

Xfce users

Due to a bug, *Xfce* won't start properly via the *GDM* login manager. You'll get a blank screen and then have to press Ctrl+Alt+Backspace to quit. To fix this, log into Gnome, open a terminal and enter:

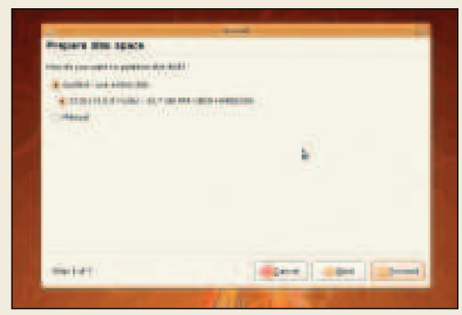
```
sudo gedit /usr/share/xsessions/xfce4.desktop
```

Change the **Exec=** line at the bottom so it says **Exec=xfce4-session**, save the file and log out. Now *Xfce* will start properly.



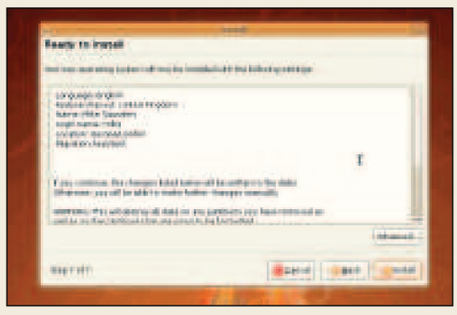
3 Location

Select your location from the world map, then choose your keyboard layout. Click Forward when you're done.



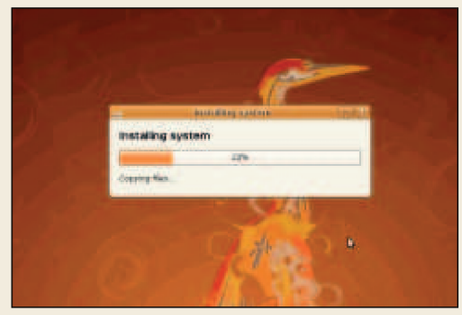
4 Partition

Now you can set up your hard drive: you can resize your existing partition(s), or devote the whole disk to Ubuntu.



7 Confirm

The installer will ask if you want to proceed with the installation. If you want to make any changes, click the Back button now.



8 Wait

Ubuntu Linux will be copied to your hard drive (it will take 10–30 minutes). When it's finished, it'll reboot your PC, so eject the DVD and have fun!

Linux distribution

Mandriva Linux 2008

The full title of this new release is Mandriva Linux One 2008 Spring. That's a mouthful of a name, so we'd better explain: it's the Mandriva Linux (**www.mandriva.com**) distro, in 'One' format (meaning it runs in Live mode straight from the DVD); 2008 is the main version number and Spring is the revision. You may recall that we included Mandriva 2008 on **LXF102**'s DVD; this Spring release freshens it up with newer packages and extra features.

Mandriva has consistently been one of the best distros for new Linux users, combining a user-friendly installation process with graphical configuration tools aplenty, so you don't have to venture into command line territory. See our review on page 26 for more information on the distro and have a look at **README.pdf** on the **LXF**DVD.

Mandriva is bootable straight from the disc, so on most machines you can just pop the DVD in your PC and reboot. You'll see a boot menu that enables you to choose Ubuntu or Mandriva – press the down cursor key until the latter is selected, then press Enter. However, if your PC is set to boot from your hard drive rather than the DVD-ROM drive, you'll need to change the boot order in the BIOS. See the New To Linux pages on the DVD for information on changing this setting.

What you'll need

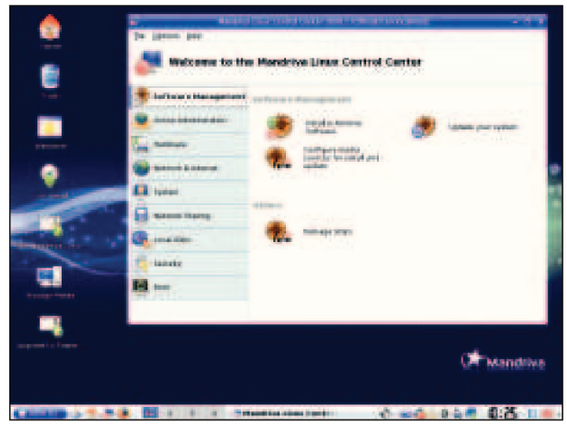
The following are the basic Mandriva system requirements:

- Intel or AMD CPU, 32-bit or 64-bit
- 256MB RAM
- 3GB hard drive space

For smooth running, we recommend that you have 512MB RAM and at least 10GB of hard drive space.

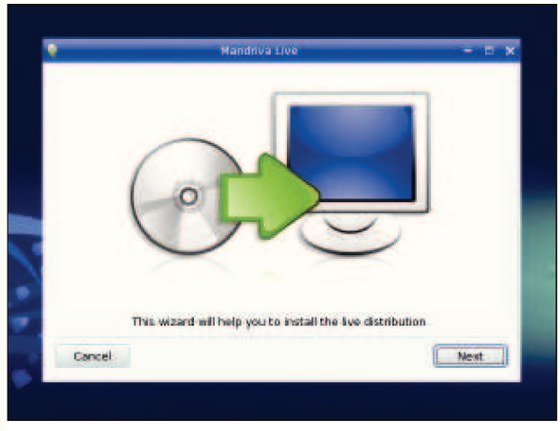
When you boot up Mandriva Linux, you'll be prompted with a few questions (including language, location and keyboard layout) before you get to the desktop.

You can now try out the supplied software and play with Linux to your heart's content without fear of breaking anything on your system – none of the changes you make will be saved on to your hard drive. When you're finished, simply click the Menu button (bottom left) and Log Out to shut down the machine.



To customise Mandriva Linux (by adding new software, for example, or setting up your hardware), click on the Configure Your Computer icon to the right of the Menu button.

> **"Play with Linux to your heart's content without fear of breaking anything."**



Mandriva's installer is quick and simple: you can have Linux on your hard drive with a few mouse clicks.

If you want to put Mandriva on your hard drive permanently, double-click the Live Install icon on the desktop. This will open up a wizard that steps through the installation process, the first phase of which is partitioning (organising your disk into chunks). If you're running Windows, you'll need to free up some space on your hard drive (we recommend no less than 5GB), so that when you boot Mandriva, the installer can shrink the Windows partition and make room for Linux. If you're happy to devote the entire disk to Mandriva, you can choose to Erase And Use Entire Disk during the partitioning phase.

The installer will then copy Mandriva to your hard drive and do some final configuration. When you reboot, remember to eject the DVD – otherwise you'll boot back up into the Live version of Mandriva. So, with the disc ejected, you'll start Mandriva from your hard drive.

Tech support

If you get stuck and need any help installing or using Mandriva, pop online and head over to the *Linux Format* website at **www.linuxformat.co.uk/forums**. There you'll find other users who may have come across similar problems, so explain what's happened and someone should be able to give you tips and pointers.

The chances are that everything will go smoothly, though, so enjoy your shiny new Linux installation!

Important NOTICE!

Before you put the DVD in your drive, please make sure you read, understand and agree to the following:

The *Linux Format* DVDs are thoroughly tested for all known viruses, and are independently certified virus-free before duplication. We recommend that you always run a reliable and up-to-date virus checker on *any* new software.

While every care is taken in the selection, testing and installation of DVD software, Future Publishing can accept no responsibility for disruption and/or loss to your data or your computer system that may occur while using this disc, the programs or the data on it. You are strongly advised to have up-to-date, verified backups of all your important files.

Please read individual licences for terms of use.

Defective discs

In the unlikely event of your *Linux Format* coverdisc being defective, please email our support team at **support@futurenet.co.uk** for further assistance. Or, if you would prefer to talk to a member of our reader support team, please telephone **+44 (0) 1225 822743**.

New software

Desktop and internet

Along with the distros, we've crammed the DVD with our pick of the freshest, best software around. In the run-up to new distro releases, open source developers scramble to get new versions out of the door, in the hope that their work will end up in the distros' repositories. So, there's been a flurry of activity this month – and we've included a bunch of great apps to try out. In the Desktop section we have two programs that fit into the rather loose 'personal life tracking' category.

Project Hamster is a time-tracking program for Gnome that summarises your activities throughout the day. Any time you change what you're doing (do your accounts, for example, or hack your **xorg.conf** file), you enter your status into the *Project Hamster* window. Or, if you're out all day doing various tasks, you can enter them when you get back to the computer. After a while, you can generate statistics on your daily life. This may be good ("Ah, I spent three hours studying today!") or bad ("D'oh, I spent six hours watching random videos on YouTube"), but either way, it could really help to organise your life.

Shape up

Also in the Desktop section is *Pondus*, a personal weight management program written in Python. This enables you to enter your current weight on a daily basis, generating graphs when you've assembled a set of data. The program can use kilograms or pounds and import/export its data in CSV format.

You can define your ideal target weight for the future – but, as the nicotine gum adverts always say, willpower is required. Still, if you want to trim off a few pounds for the summer, *Pondus*, in collaboration with *Project Hamster*, may help do the trick.

Meanwhile, over in the Internet section of the DVD, we have the fifth beta release of *Firefox 3.0*. Although no date has been set for the full release of this browser, we hope to see it before the end of the summer – and it's looking outstanding.

For years, *Firefox* has been lambasted for its vast memory consumption and sluggishness; with *Firefox 3.0* these problems are disappearing rapidly. Many memory leaks have been fixed and while there's still work to be done, it could win back users who've switched to *Konqueror* or *Opera*.

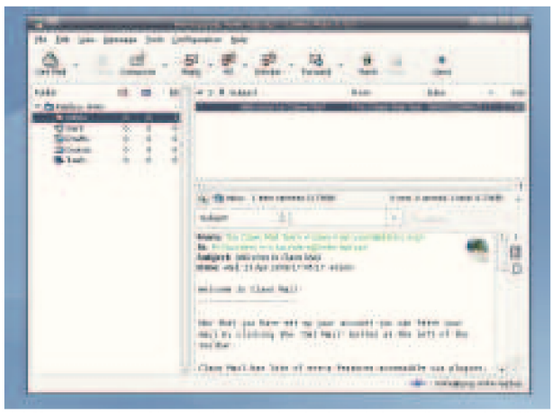
New for netizens

To try this latest beta, copy **firefox-3.0b5.tar.bz2** from the **LXF**DVD into your home directory, shut down any instances of *Firefox* you may have running, then open a command line and enter:

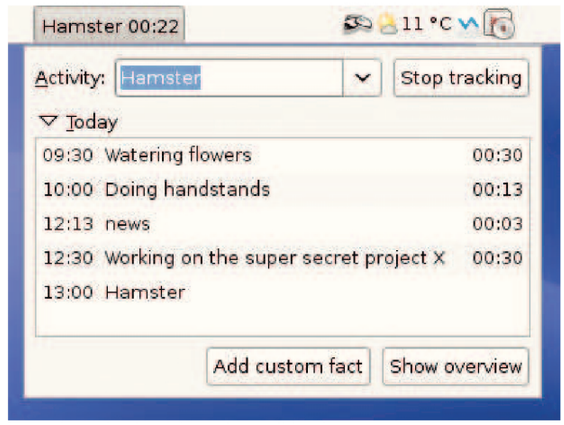
```
tar xfvj firefox-3.0b5.tar.bz2
firefox/firefox
```

Now, browse to your favourite sites, especially those heavy on images and JavaScript, and see the speed gains for yourself. If you want to use this beta release regularly, you can set up a desktop shortcut to the **firefox** script in the **firefox/** directory, and the same installation and usage instructions will apply to later beta releases.

Claws Mail had a new release this month – 3.4.0. If you've never used this mail client before, we highly recommend giving its tyres a kick: it's extremely fast yet still packs plenty of punch, such as multiple accounts, threading, filtering, NNTP news support, coloured labels and user-definable headers. For regular *Claws* users, new features in 3.4.0 include support for PNG themes, large message limits (so you don't have to view a whole 5MB text file at once) and a search facility in the filter settings.



› Fed up with bloated email clients? *Claws Mail* is stuffed with useful features, but doesn't chew up all your available RAM.



› Get your life in order with *Project Hamster* and weed out all those annoying tasks that take over your spare time.

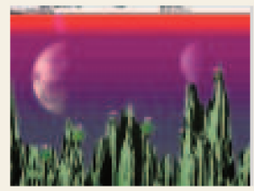
Other software

Three top games

After you've installed your new distro and tried out the latest apps, you'll no doubt want to wind down with some quality entertainment software from our Games section. Grab a cuppa/beer and give these a go.

First, we have the new 2.9 release of *Atomic Tanks*, a comical *Worms*-like game in which you defeat other players to buy equipment for future battles. The concept's simple: you control tanks on a 2D game area, fire an assortment of weapons into the air and hope they land on your opponents. You won't always get it right, as the tanks can move around – so getting a direct hit is supremely satisfying.

Next up is a curious logic puzzle game called *House of Mirrors*. This requires the Scala programming language (as provided in the dependencies subfolder, or possibly in your distro's repositories). With Scala installed, extract the *Mirrors* archive, switch into the resulting directory and enter **./run.sh** to start the game. (See the Help/New To Linux section on the DVD for more information on extracting software at the command line). It's fascinatingly odd: you have a light source and mirrors and your job is to feed light to a number of detectors.



› *Atomic Tanks*: classic *Worms*-ish gameplay takes on a space-related twist.

Finally, we have *Stormbaan Coureur*, formerly known as *Sturmbahnfahrer*. This driving romp places an emphasis on physics and handling – it's not arcadey like *Ridge Racer*. You drive around an obstacle course, trying to keep your car in check and avoid falling off platforms and ramps. But despite the serious focus on accurate physics, it's also great fun to jostle the car around and clatter into things. To run *Stormbaan Coureur* you'll need the *PLIB* and *ODE* libraries; if they're not available in your distro's repositories, look in the dependencies subdirectory to find the source. LXF

The best new open source software on the planet

LXF HotPicks

Chandler » SoundConverter » Super Grub Disk » Xmonad » Risk » QTads » Rootz » PictureFlow » Wammu » WordPress

Richard Smedley
FOSS community activist and long-time LXF contributor, Richard scours the forest with a specially trained monkey, sniffing out the HotPick truffles.

Personal information manager

Chandler

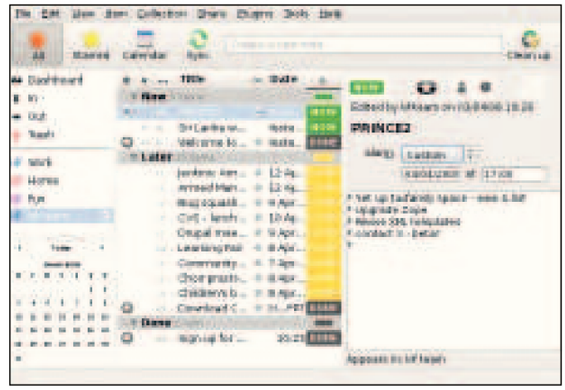
Version 0.7.5 **Web** http://chandlerproject.org

Do you have lots of work to do? If so, there's a good chance that you waste a lot of your brain power on simply remembering the things you have to do, rather than actually getting on and doing them. With every task your manager/director of studies/significant other gives you, your capacity to actually do the work diminishes. At least, that's our excuse.

David Allen went some way towards solving this conundrum with his 'Getting Things Done' time-management methodology, which basically states that you should associate each task you need to do with an action, then write down what you have to do and come back to it later. The authors of *Chandler* have gone one step further, and applied Allen's theories to a personal information manager (PIM) application aimed at overloaded knowledge workers.

Knowledge control

It's best to think of *Chandler* as a kind of advanced to-do list. Data is entered (or imported) into *Chandler* as notes, which can be added to the calendar as events, emailed to others or 'starred'. Notes are grouped together into collections, which are labelled 'Now', 'Later' and 'Done' according to when you need to act on them, with any events you've added to the calendar being triaged automatically according to when they take place. There's no limit to how many collections you can make, and once you get into the habit of organising yourself in this way you find that it becomes second nature.



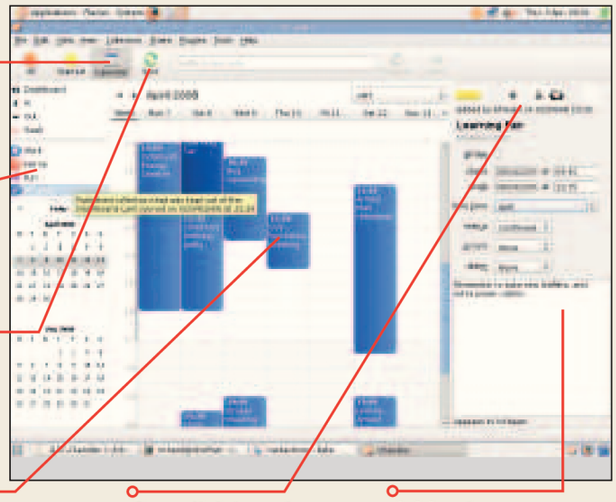
› ***Chandler*** **sports all the usual personal information manager features, such as notes tied to alarms.**

As well as the desktop application, the developers are responsible for the *Chandler Hub*, a web application that enables *Chandler* users to share information. Your *Chandler Hub* account is designed for collaboration within small groups; one of the design goals was to create a collaboration app that scales well within small organisations, unlike, say, *Evolution* or *Outlook*, which are designed to pursue the more lucrative corporate contracts.

The *Chandler* website – particularly the project blog – is full of documentation, reflecting the efforts that have brought *Chandler* this far, but the information is scattered and often hard to make sense of. If you want a more complete understanding of the principles on which *Chandler* operates, get down to the nearest library and take out David Allen's *Getting Things Done: the Art of Stress-Free Productivity*.

Much of the story of *Chandler*'s development can be found in Scott Rosenberg's book *Dreaming in Code: Two Dozen Programmers, Three Years, 4,732 Bugs, and One Quest for Transcendent Software*, published last year, which details the kind of problems seen on many large projects. When you've read those two, get *Chandler*, get organised, and spend more time working and less time worrying!

Exploring the Chandler interface



View
Switch between Calendar and overview, which can be filtered to just starred events.

Work and play
Keep your home tasks and hobbies on the same app – your work/life balance before you.

Sync
Share data with a *Chandler* server to open the collaborative power of the app.

Calendar view
Mouse input of times on the calendar view is one of *Chandler*'s joys. (The task view is shown in the other screenshot.)

One-click interface
Change triage status, add/remove starred status, send via email, and add to calendar.

Add notes
Create notes and alarms to assign to calendar events.

Audio file converter

SoundConverter

Version 1.0.0 **Web** http://soundconverter.berlios.de

Sometimes it seems that we are drowning in MP3 players, and that it won't be long before they come free with every pack of breakfast cereal. Audio playback devices are found in our telephones, cars, and virtually every new consumer device. Programs like *Banshee* and *Amarok* enable you to update large playlists for iPods and other players, but are overkill for simply adding a couple of files to your phone to listen to during your morning commute.

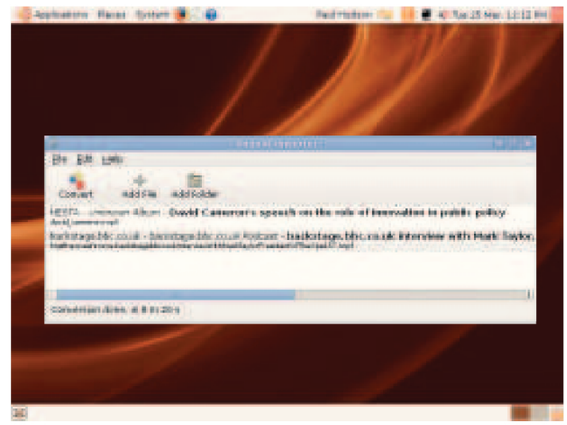
Step forward *SoundConverter*, a Gnome app for making OGG, MP3 or lossless files from virtually any format you may have downloaded. Thanks to its use of the *GStreamer* back-end and its multifarious plugins, it's ideal for producing small files for portable devices without changing your main collection.

Getting better

SoundConverter is designed to do one thing simply and well. Numerous small improvements and bugfixes have led to this 1.0 release, yet the developers have resisted the temptation to add unnecessary features. Your first call should be Preferences on the Edit menu, to set some basic defaults. Choose a file to place the outputs, and whether you want subfolders created on artist or album name. You can also set what changes you want to make to the filename and tell the app whether to delete the original files. Finally, set the output to WAV, FLAC, MP3 or OGG, and set the quality (bitrate) if you're using a lossy file format.

> **"Banshee and Amarok are overkill for adding music files to your phone."**

Now all you have to do is choose the files you want to convert, then click on the Convert button. A progress bar keeps you informed of conversion time, and you can pause the encoding if you need to liberate processing power for some other task. Any modern distro with *GStreamer* and the Gnome libraries will run *SoundConverter*, given presence of the *gnome-python* and *PyGTK* libraries.



› Find the file you want, then click on Convert – it couldn't be simpler. You can even make MP3s and Oggs from MOVs and AVIs.

Rescue boot disk

Super Grub Disk

Version 0.9711 **Web** http://supergrubdisk.org

Team LXF are installing, re-installing, and upgrading all the time, and have had to become quite proficient at *Grub* commands, but we still make mistakes here and there. General rescue distros like Insert (on the coverdisc, **LXF105**) are great, but for some problems you need a specialist. Hurrah then for *Super Grub Disk* (*SGD*). *SGD* is a bootable floppy or CD-ROM that gives you menu choices for all common rescue disk scenarios, such as a Windows re-install overwriting the bootloader. You can restore *Grub* to the master boot record, and you can boot from any disk drive connected to the machine, and this new release will work extra magic with Windows partitions on other disks. If these options aren't enough for you, you can always just type C and drop to the *Grub* command line.

SGD is a tiny download – it's just a 400k *bzip*ped archive. (If you are downloading from an operating system that doesn't support decompressing *bzip2* files, you can download the 4MB ISO file.) Floppy and USB pen drive images are also available. To write the files to a pen drive, format the partition (as ext2 or ext3), then use *Grub* to make the pen drive bootable. For this you'll need to be at a Linux machine with *Grub* installed. Copy the unzipped files to **/boot** on the formatted pen drive, then unmount the drive and open *Grub* from a terminal:

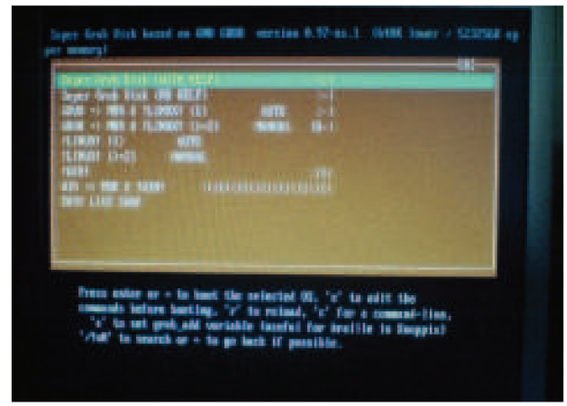
```
grub
grub>device (hd3) /dev/sdc
grub>root (hd3,0)
grub>setup (hd3)
grub>quit
```

with **(hd3)** and **/dev/sdc** changed as appropriate: eg **(hd2,0)**.

Brilliant booting

Boot from any rescue media and you'll be presented with a menu, from which the first choice ('with help') will be the most popular. Next, language selection covers most European options, with various languages from Spain reflecting the project's origins in the Iberian peninsular. When you've chosen your language, you'll be given options for most conceivable rescue needs. As well as partitions, *SGD* will also boot slices (the partition segments used by BSD derivatives such as OpenSolaris) so you will be able to rescue your system after all of your operating system experiments.

The *SGD* website contains enough documentation to get you started in most scenarios, along with links to further reading including Shawn Herman's extensive guides to building and using *SGD*.



› Go, *Grub*, go! Breathe a sigh of relief as the unbootable becomes bootable.

Window manager

Xmonad

LINUX FORMAT Hottest Pick

Version 0.7 **Web** http://xmonad.org

Have you splashed out on a big LCD monitor recently? If so, you'll find some of your hard-earned money has gone on screen space to display useless window borders. If you've bought one of the new mini-marvels like the Eee PC, you'll be even less willing to give up your precious pixels for window decorations.

A whole school of minimalist window managers exists to liberate your screen space and free you from unnecessary mouse use, some of which were covered in our Roundup in **LXF103**. *Xmonad* is a newcomer to this efficient cadre of downsized GUIs, and recent development has been brisk. *Xmonad* is written in Haskell, a programming language also used in the *Darcs* revision control system. Packages are available in Ubuntu and other distros, and pre-built binaries are available for other distros and the BSDs, but building from source is easy. Grab the latest tarball from the *Xmonad* site, or check out the latest code from the *Darcs* repository. You'll need the *Glasgow Haskell Compiler* (typically named *GHC6* on most systems) and X11 headers (which can normally found in a package named **libx11-dev** if they're not already installed).

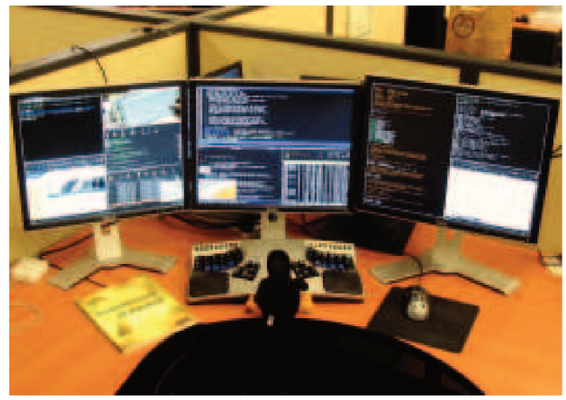
Under your fingers

Working in *Xmonad* is easy, but you'll need to take a few moments to learn the keyboard commands. Alt+Shift+Enter opens a terminal; doing it again opens a further terminal tiled with the first. Alt+Space tabs between tiled view and full-screen for the focused window. Alt+J and Alt+K tab the focus between panes, as does the mouse. Other combinations move the focused window to different panes, and resize individual panes. Clicking and dragging will float a window, while Alt+T will bring a window back down to the tiling layer.

And there's more...

Beyond the power of *Xmonad* out of the box, there's much more that can be added on. *Dmenu* gives access to every app in your system, and is easily downloaded, untarred and installed. Once it's on the system, hit Alt+P and the menu appears as a line of program names along the top of the screen. Start typing the name of the program that you wish to launch, and choices on that top line narrow until you get a unique option, though you can select from the apps on the menu at any point.

The **xmonad-contrib** package contains hooks and extensions to alter the layout and tiling algorithms, change the font rendering, and various shortcuts for prompts, *SSH* and more. Writing or modifying a module for the **xmonad-contrib** package is a useful way to try out some practical Haskell coding. Haskell is sufficiently different from most other common languages to provide a new way of looking at programming.



› Give yourself more elbow room with an efficient tiled window manager like *Xmonad*.

Nearly all Unix window managers give multiple desktops – something that users of most other operating systems miss out on – and *Xmonad* is no exception. By default there are nine workspaces, reached via the key combinations Alt+1 to Alt+9. If you have more than one monitor, each can view a different workspace, or you can use *Xmonad* with *Xinerama* to run the display across as many screens as your graphics cards can manage (as shown above).

This latest release can be a drop-in replacement for Gnome's usual window manager, *Metacity*. This will typically involve editing **~/.gnomerc** to add:

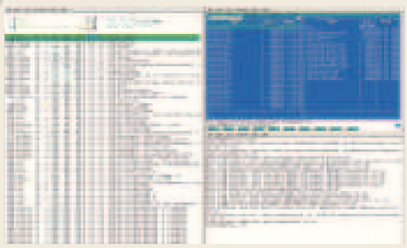
```
export WINDOW_MANAGER=xmonad
```

then tweaking *Xmonad* to make space for Gnome's panel and status bar. You can disable *Nautilus* with:

```
gconftool --type boolean --set /apps/
nautilus/preferences/show_desktop false
```

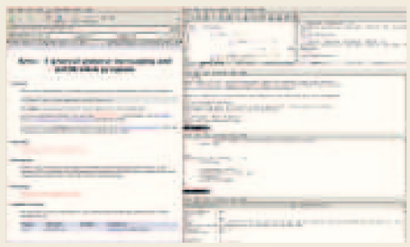
Other necessary tweaks, particularly changes that must be made in **~/.xmonad/xmonad.hs**, can be found on the Haskell wiki, which has links from the *Xmonad* website.

Step by step: living with tiled windows



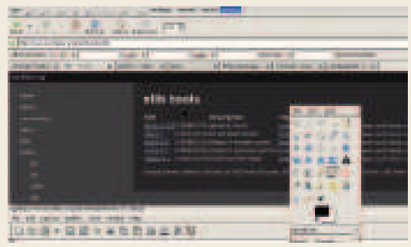
» Back to the 80s

Each time you hit Alt+Shift+Enter a new terminal opens – in this case the Gnome terminal – with no unnecessary window decoration.



» Tile shuffling

When you're working on a particular pane, you can toggle Alt+Space to bring it to the tiling model you want, and Alt+H and Alt+L will stretch it out to the size you need.



» Floating and menus

Alt+1 to Alt+9 move you between desktops, as with the *PWM* window manager. Alt+Shift+3 moves the focused pane to the third desktop.

HotGames Entertainment apps

Strategy game

Risk

Version 1.0.9.5 **Web** http://jrisk.sourceforge.net

A brief moment of triumph for the green armies, before the AI teams wiped the floor with us.

Those who have yet to feel the thrill of their conquering forces sweeping through the volcanoes of Kamchatka, marching through the Urals, and taking all before them as Europe falls, have missed out on the innocent bloodbath that is the Risk board game. Waste no more time: download this Java re-creation, and let slip the dogs of war.

Having downloaded and unzipped the program, you can click on **Risk.sh** in your file manager, or simply run **java -jar Risk.jar** from within the unzipped directory.

You'll need a reasonably modern computer, but in theory *Risk* will run on anything better than a Pentium III with 64MB RAM. It's playable on a 1024x768 laptop screen, but this latest release lets you resize to much large boards in the Swing GUI version. You can choose to face up to five AI players, or engage in some multiplayer carnage. Any computer running *Risk* can act as the game server – just click on Start Server from the opening menu. Other players click on Join Game, then enter the server address. You can play on a local network, or across the internet. Once all the human players have logged on, AIs may be added to fill out the game.

Players take turns to add their armies to the map of the world, which is divided into territories. Every turn you have a few more armies to add, and can choose which neighbouring territories to invade. The more areas and countries you hold, the more armies you gain each turn. Battles are decided by dice roll – kindly carried out for you by your computer.

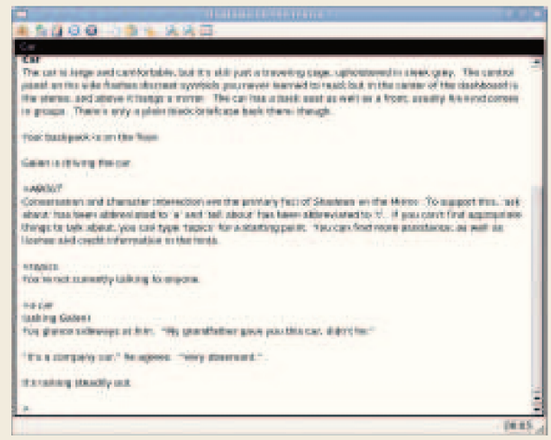
> **"Remember that this is just a game, not a metaphor for life."**

Subtlety is not the main feature of *Risk* strategy. Superior numbers at the right time produce winners, so place your initial armies carefully and let the other players start to kill one another off. In the board game alliances are often made and broken as the game progresses – if you're playing the AIs, then it's best to trust no-one. Remember though that this is just a game, not a metaphor for life.

Interactive fiction platform

QTads

Version 1.7 **Web** http://qtads.sourceforge.net



You are in a maze of twisty little passages, all alike. No, scratch that, you're in a car...

Back in the 8-bit days, when most novelists used Remington typewriters, text adventures were a mainstay of gaming that had survived from university mainframes. Adventure games like *Colossal Cave Adventure* ("You are in a maze of twisty little passages, all alike"), led to interactive fiction (IF) computer games like *Zork* ("It is pitch black. You are likely to be eaten by a grue."), and gave us two of the most famous phrases on the internet before "All your base are belong to us". User interaction meant typing questions, rather than clicking your way round a maze.

From there text adventure games evolved down one branch to modern graphical adventures, but IF grew, evolving into hypertext fiction and gamebooks along the way. *Tads* (Text Adventure Development System) was a shareware app to develop and run IF, and *Tads 2* became a cross-platform standard for producing IF in the 1980s, followed by *Tads 3*, an object-oriented re-write.

Frobtads is an interesting console-only version, which is open source and freely-redistributable. Unfortunately you're not allowed to modify or improve *Frobtads*, but you can port it, and it has appeared on a number of platforms. For truly Free Software, *QTads* is the only interpreter available. It does the job well, and the new version has many useful updates.

As well as compiling on 64-bit machines, *QTads 1.7* also increases the number of turns you can undo, parses game meta-information, restores windows correctly from previous sessions (including full-screen mode), and is compatible with the latest virtual machines. It is still on *Qt 3* however, which will be a problem on *Qt 4*-only distros before the next update.

Games in the *Tads* format are easily available. Some are more story than game, but entertaining nonetheless, and there's more to gaming than shoot/get treasure/repeat. Play is as simple as it was in the 8-bit days: read the narrative, type your questions, interact. The ability to undo several moves nowadays is a welcome bonus, but the simple pleasure of text adventures remains the same.

Hybrid client system

Rootz

Version 0/4.1 **Web** http://vamosproject.org/rootz

Portable apps are a brilliant idea. You can package up a binary with all of its dependencies and run it from a memory stick anywhere, which is a great way to demonstrate a piece of software or use it on the go. Imagine if you could run any random piece of software, from anywhere, as easily on your local network. *Rootz* gives you that power, enabling you to mount an ISO or a directory locally, over the LAN or even over the internet.

Installation has a few dependencies, for all the remote filesystem malarkey you'll be practicing. On Debian-based systems run

```
sudo apt-get install dchroot
sudo apt-get install libfuse2 fuse-utils
sudo modprobe fuse
```

You'll want to check that you have SquashFS and UnionFS; if not, do:

```
sudo apt-get install unionfs-modules-$(uname -r)
sudo apt-get install squashfs-modules-$(uname -r)
```

For the optional HTTPFS, to allow mounting of HTTP mirrors, check which version of *Libfuse* you have:

```
dpkg -l libfuse2
```

then download the matching HTTPS version from Vamos and move it to **/usr/bin**, and do:

```
sudo chmod 755 /usr/bin/httpfs
```

Now un*tar* the *Rootz* package, *cd* into the **rootz** directory and enter:

```
./setup-browser
```

If you want to mount *Rootz* with the standard mount and add *Rootz* entries to *Fstab* (recommended), enter **./setup-mount** as root.

Documentation is fairly good, but there are a few quirks in the translation. The HOWTO shows you how to mount remote sytems:

```
./rootz http://ubuntu-cdimage.datahop.it/releases/7.10/release/ubuntu-7.10-dvd-i386.iso /mnt/ubuntu
```

Now you can run remote apps directly from the command line:

```
$ sudo ./rootz-launcher whoami
```

It just looks like a calculator, but that's the point: *Rootz* is totally seamless.

```
[sudo] password for richard:
trying to locate whoami on ubuntu...
I: [ubuntu chroot] Running command: "which whoami"
Run whoami (ubuntu image)?
Hit anything to proceed. Use a or A to abort
I: [ubuntu chroot] Running command: "whoami"
root
$
```

Or even from your browser with **rootz://ps**. You can see the output of the above in the screenshot.

Cover and image viewer

PictureFlow

Version 0.1.0 **Web** http://pictureflow.googlecode.com

It is a truth, universally acknowledged, that any geek must match or exceed the shiny gadgetry and eye candy of his friends. Look at last year's proliferation of rotating cubes, transparent terminals, and wobbly windows. Now everyone wants an iPhone, or at least doesn't want to miss out on the flashy GUI goodness that Apple has brought to its expensive toy.

PictureFlow is a cover viewer for the *Qt* toolkit, that displays images with an animated transition effect, much like Apple's *Cover Flow,* as used in *iTunes*. It's optimised to run on your Linux mobile device, but the lack of an appropriate portable device shouldn't stop you trying it out on your desktop.

To build *PictureFlow*, you'll need *Qmake*. On Kubuntu (and most other distros) it's in **qt3-dev-tools**. Untar and build with:

```
tar zxvf pictureflow-0.1.0.tar.gz
cd pictureflow-0.1.0
sudo qmake-qt3 pictureflow.pro
sudo make
```

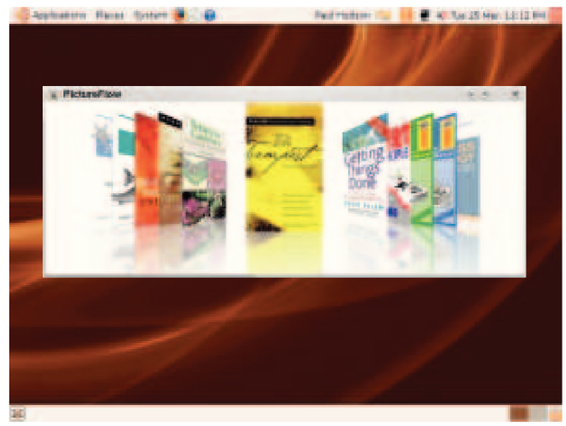
There's no documentation in this first release, but all you do to run it is point it at a directory of cover art, like so:

```
./pictureflow  ~/photo/fosdem2008/
```

You can search YouTube for videos of the animated transaction effects in action (and download them with last month's *YouTube-dl* tool). The blur effect shown on the reflections in the screenshot is the icing on the cake.

> **"PictureFlow works on the Trolltech Greenphone and the Chumby Wi-Fi widget."**

PictureFlow works on the Trolltech Greenphone and the Chumby Wi-Fi widget. It will work with *Qt* on other platforms, but its lightweight requirements (it doesn't need 3D acceleration or even the OpenGL libraries for its transition effects) means it can look flash on any ancient device you're reviving with a Linux install. As it doesn't even need floating-point operation, it will compile on some very low-powered CPUs.



Unnecessary eye candy? Who cares – it looks good on the iPhone, so let your desktop follow the Apple hordes.

At the moment it's just a bit of fun, but as it's developed it will be integrated into all sorts of multimedia apps, slideshows, and portable devices. You can also try *PhotoFlow*, though it's only available through *SVN* for landscape format pics.

Mobile phone manager

Wammu

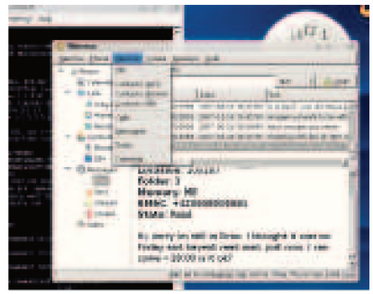
Version 0.26 **Web** http://wammu.eu

Wammu lets you manage your mobile telephone from your Linux box. Written in Python, with the *WXPython* toolkit; it uses *Gammu* as a back-end. *Wammu* supports a number of telephones – particularly Sony-Ericsson, Nokia, Motorola, and most Symbian devices. Supported phones are listed in the *Gammu* phone database, along with all of the supported features, which can be accessed directly from the help menu.

Wammu is available readily packaged from most distros, with Debs, RPMs and source code available from the website. You'll want to make your phone discoverable by Bluetooth, connect a USB lead or check your laptop's infrared magic is working: then you can use the wizard to discover your phone, and connect.

The most common use for *Wammu* is to download contacts, calls, text messages and calendar items. Any *Gammu* (or *Gammu+*) app can save downloaded data as a file, and you can export messages as email. But it's not all one-way traffic: contacts, calendar items and to-do lists can all be composed on your PC and uploaded to the phone. You can also compose SMS messages, saving you the agony of predictive text and tiny keys.

Some phones can have other files uploaded and downloaded, including ringtones, and each release improves multi-media support in SMS composition. Check out the detailed feature list for support for your model of phone.



› Retrieve, review, and back up your messages, contacts and other phone information.

Blogging software

WordPress

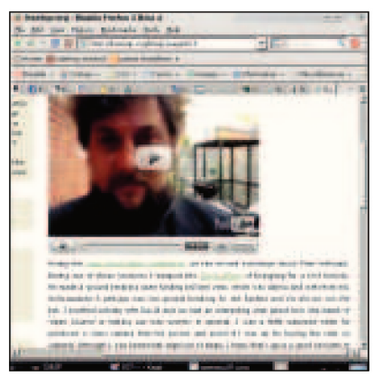
Version 2.5 **Web** www.wordpress.org

Sometimes it seems that if you're not blogging you must be part of a very small, very silent minority. Blogging software isn't all about hot air, though. *WordPress*, as well as being popular for blogs, makes a very good basis for a simple content management system.

WordPress has come a long way since we last looked at it, in **LXF65**. The latest version adds multi-file uploading, customisable dashboard, salted passwords and cookie encryption, a media library, a WYSIWYG editor that doesn't mess with your code, concurrent post-editing protection, full-screen writing and a search facility that covers posts and pages.

Wordpress.org has a handy guide to upgrading or installing from scratch. Requirements are PHP version 4.3 or later, and *MySQL* version 4.0 – conservative enough to be covered by almost all cheap or free hosting providers. For total newbies there's even a *WordPress for Dummies* book available, covering version 2.3.

WordPress is extremely popular, which has led to a huge treasury of themes and plugins: while the former are worth investigating, the latter should be approached with caution, as third-party PHP code on any project is always a security risk. Of course if you're just hosting an intranet blog or CMS with *WordPress* then that's not a worry. LXF

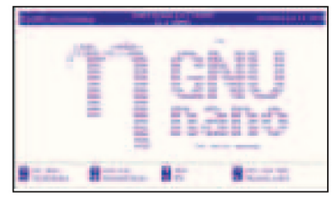


› If you've got something to say, you can blog it, or if it's on YouTube, you can embed it.

Also released

New and updated software that also deserves a look...

GNU Nano 2.1.0 (unstable)
Redoubtable clone of the *Pico* text editor gets rebindable key support.
www.nano-editor.org



Physics-Live CD 1.0
Slax-based bootable physical simulations, with added maths and chemistry.
www.physics-live.org

Cruiser 0.1.0
System tray browser for files and feeds.
http://cruiser.sourceforge.net

ADempiere 3.4.0
ERP, bazaar, and total business solution.
www.adempiere.com

Schoorbs 1.0 Beta 2
Room and resource booking, with web 2.0 interface.
http://schoorbs.xhochy.com

Cfunge 0.2.0
Small, fast Befunge-98 interpreter in C. Now that's what I call entertainment!
http://freshmeat.net/redir/cfunge/73691/url_homepage/cfunge

Poker-network 1.3.0
Poker server and client library: get rich with FOSS and rudimentary mathematics.
http://gna.org/projects/pokersource

FLTK 1.1.8
Bloat-free, cross-platform, C++ GUI toolkit adds new *GTK*-style theme, better Glut 4 compatibility, and alpha blending for image maps.
www.fltk.org

BeeDiff 1.6
Compares text files graphically.
www.beesoft.org/beediff.html

Vlock 2.2
Lock virtual consoles on shared machines.
http://cthulhu.c3d2.de/~toidinamai/vlock/vlock.html

Mahara 1.0.0
Portfolio, blog, CV builder and social networking system for user-centred life-long learning and development, from New Zealand academia.
www.mahara.org

New to Linux?

All the essential info you need to know to get started with Linux – and there's more on your DVD!

See index.html on your DVD for extra info!

What is Linux?

Linux is an operating system, like Microsoft Windows or Mac OS X, that controls the programs and hardware on your computer. It is completely free of charge and open source – anyone can download the programming code behind it and make modifications. With thousands of people around the world improving it, Linux is very powerful, flexible and reliable. Companies such as Amazon and Google rely on it every day.

While Linux has many paid developers from the likes of IBM, Novell, Red Hat and other companies, much of the code is written by part-time programmers around the world, communicating via the internet. They work on Linux for the love of it!

Because Linux is a unique operating system, it looks and works differently to Windows and OS X. It won't natively run Windows applications (although there are emulators, such as *Wine*, to provide a basic layer of compatibility), but there's a vast amount of high-quality software available for free. You may already have heard of *Firefox* and *OpenOffice.org*, for instance. Exploring and understanding Linux is a fascinating experience – it may work differently to your expectations, but you'll love its stability, freedom from viruses and spyware, and zero cost. Nobody can take Linux away from the community; it will always be free.

What is a distribution?

Linux is available in many different forms – because it's totally free, anyone can make their own version. All the different kinds of Linux systems – or distributions – are built from the same components, but they have differing versions of software and their own configuration tools.

Some 'distros' are made by large companies (such as Novell's SUSE Linux and Red Hat Enterprise Linux), whereas others are one-man efforts (Slackware) or built by the internet community (Debian). For your first distro, we recommend Ubuntu or Mandriva as easy starting points; later on, you should try Fedora and OpenSUSE as well. On servers, Debian is a supremely solid option. With our DVDs, you can find the perfect Linux flavour for you – enjoy the choice!

Booting our DVD

Many of our coverdiscs are bootable, which means your PC will boot up from the inserted DVD instead of the hard drive. If you're having problems booting from the coverdisc, first check that your computer is configured to boot from DVD (rather than hard disk). Usually, you need to access your PC's BIOS settings and make sure the DVD drive comes first. You can do this on most PCs by pressing Del, F1 or F2 after turning on the power. Many machines tell you what to press as they start up. Consult your computer manual for more information, and if you're still stumped, try the *Linux Format* website forums. You can also try burning and booting the *Smart Boot Manager* CD-R ISO image, which is supplied on our DVD in the **Essentials** section.

How to install Linux

Every month, our DVD includes one or more Linux distributions. Some of these run in 'Live' mode, which means that they run straight from the DVD with no need to install. For instance, if we include Ubuntu Linux, you can boot it from our DVD and explore the supplied software – it won't touch your hard drive. If you do choose to install it permanently, however, you can do so via an icon on the desktop. Many other distros boot up directly into an installation process.

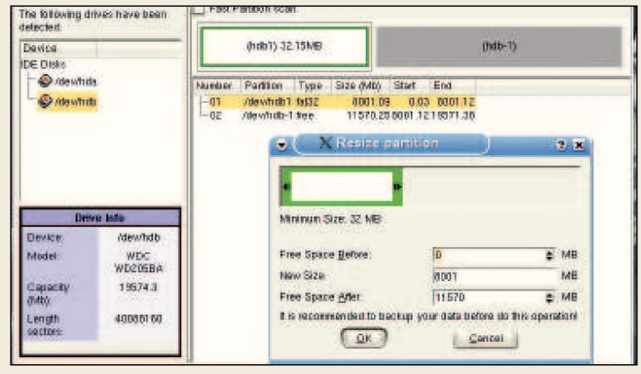
Either way, because Linux is a standalone operating system, it needs space on your hard drive, so you'll need to create partitions for it (see the box below). We always include plenty of information about specific distros in our DVD pages, with tips and walkthroughs to help you get started.

Partitioning your hard disk

A computer's hard disk is divided into partitions, each of which is accessed as a separate data storage area. Windows usually exists in a single partition occupying the whole drive, so adding a second operating system will require that each OS has its own portion of the disk.

In contrast to Windows, Linux installations generally use two or more partitions; the exact number depends on how the PC is being used. In most cases, you have a partition for the root (**/**) filesystem where everything is stored, along with a swap partition (virtual memory) that's twice the size of the machine's RAM but no more than 512MB. You can partition as you like – putting **/home** (for users' files) on its own partition to make upgrades easier, for instance – but the simplest initial route is to put everything on **/**.

Most distro installers (the Ubuntu installer is probably the best of the bunch) enable you to create and delete partitions, and some will even let you resize others to free up more room on your hard drive. *PartitionMagic* under Windows is particularly useful here. On the Linux side, *QtParted* is an excellent partitioning tool that many distros use in their installers or config tools.



› **Many distros use *QtParted* during installation.**

Using the Linux desktop

Linux's graphical user interface is very flexible: you can replace parts of it to suit your needs. For instance, you can run a desktop manager program that looks and feels like Windows, or you can opt for something more speedy and minimal. The two most popular desktops on Linux are Gnome and KDE – give them both a try to see which one you prefer. Note that most applications are desktop-independent, so you can run Gnome programs on KDE and vice-versa.

During your Linux travels you'll come across many programs for all sorts of tasks. There are tens of thousands of open source applications available, and you can browse and install many of these via your distro's package manager. Here are some to look out for (many distros install them by default):

» **Firefox** Widely used on Windows, this web browser melds excellent standards support with a great range of extensions.

» **MPlayer** A hugely versatile media player that can handle almost every file format.

» **OpenOffice.org** The *de facto* standard office suite for Linux. It can open *Microsoft Office* files and export directly to PDF.

» **Gimp** Linux's most powerful image editing program, and an excellent free alternative to *Photoshop*.

» **Scribus** A desktop publishing application that's undergoing heavy development.

On the server side, *Apache* is the most popular web server in the world, while *MySQL* and *PostgreSQL* are much-favoured databases. Programming tools abound for Linux: *GCC* is the main C/C++ compiler, while Python, Perl and other scripting languages are available. You can get Java and an open source implementation of C# in the form of Mono.

The software installation process varies from distro to distro – in general, you can fire up your package manager and search for a program to install it via the internet. To install software from our DVD, please open **index.html** on the disc and go to the **Help** section via the left-hand menu.

Who is the root user?

Linux is a multi-user operating system: that is, many people can use it at the same time (if logged in remotely). For home machines, you typically set up two user accounts during installation – one for your day-to-day work, and one for 'root', the administrator user. To protect your system, only root can change critical files such as startup scripts and libraries.

Consequently, during installation of a distro you'll provide passwords for your normal user account and root. After installation, when you run certain programs that modify the system (such as a package installer), you'll be prompted for the root password. Note: Ubuntu has a slightly different system, in that the root account is disabled and you're prompted for your normal user password to do administration jobs.

At the command line, you can switch to the root user with **su** in most distros. You'll then be prompted for the root password. In Ubuntu, enter **sudo bash**, which will prompt for your normal user password.

In summary, user accounts keep your system safe and secure, by preventing you (or others) from breaking critical OS files – only root can do that!

What are all these files?

Linux software is normally supplied in three formats: source code, Deb binary package and RPM package. Where these are available, we include them on our DVD – but sometimes a program's developers have only released source code, which you need to compile. If a program is available in binary package format, you can install it using your distro's package manager.

» **program-2.0.5.i386.rpm**
A binary RPM package for x86 PCs (SUSE, Fedora, PCLinuxOS, Mandriva).

» **program-2.0.5.i386.deb**
The same, but a Debian package (Debian, Ubuntu and Mepis).

» **program-2.0.5.tar.gz** (or **.tgz**)
This is usually source code.

» **program-2.0.5.tar.bz2**
Same, but compressed differently.

» **program-2.0.5.src.rpm**
This is also source code, but supplied as an RPM to make it easier to install.

» **program-2.0.5.i386.FC8.RPM**
A binary, x86 RPM designed specifically for Fedora Core 8.

» **program-devel-2.0.5.i386.rpm**
Libraries for software development.

What is the command line?

When you need to type in commands, you use the command line interface, aka shell. In most distros you can find this in your program menu under the name Terminal, Xterm, Shell or Konsole. If you've used MS-DOS before you'll be familar with how it works – although the Linux command line is much more powerful.

The most frequently used commands include: **ls** to list files; **cd <dir>** to switch to a different directory; **cp <file1> <file2>** to copy a file; and **rm <file>** to delete a file. You can get help on most Linux commands with **man** – for instance, **man ls**. This brings up a description screen; hit Q to exit. Whenever you come across text files, you can read them like this: **less README**.

You can access (and edit) commands you've entered earlier with the Up and Down cursor keys. Additionally, to speed up your typing you can hit the Tab key after entering a few letters of a file name or command – it'll automatically fill in the rest. As a safety precaution, Linux doesn't let you run programs in your current directory unless you explicitly tell it to with **./** (dot slash) before the file, eg **./progname**. LXF

Bergen... Jakarta... Puckoon... Espoo... Timbuktu... Hamilton... Lusaka... Prague... Pyongyang...

Don't wait for the issue to reach your local store!

Do you live outside the UK? Subscribe to Linux Format today

BENEFITS OF SUBSCRIBING

- Save money on store prices
- Delivered direct to your door
- Get your copy before your local store does
- DVD with every issue

OVERSEAS SUBSCRIPTION RATES

	1 year (13 issues)	2 years (26 issues) save 10%	3 years (39 issues) save 15%
Europe	€112*	€203*	€287*
USA	$179**	$322**	$457**
Rest of the world	£90	£162	£230

Subscribe online: www.myfavouritemagazines.co.uk/lxd/p051
Or phone: +44 1858 438794 Please quote P051

OFFER ENDS 17 JULY 2008

*Payment will be debited in Pounds Sterling (Europe 1yr £89.80, 2yr £151.02, 3yr £213.95)
**Payment will be debited in Pounds Sterling (USA 1yr £90.00, 2yr £162.00, 3yr £229.50)
Exchange rates correct at time of going to press, May 2008. Payment by credit card only. If at any time during the next 60 days you are dissatisfied in any way please notify us in writing and we will refund you all unmailed items. Your subscription will start from the next available issue. Minimum subscription term is 12 months.
Subscriptions hotline is open Monday to Friday 8:30 am to 9:30 pm, Saturday 8:30 am to 4:00 pm (GMT).
UK readers, please turn to page 102 for your own great subscription offer.

LINUX FORMAT Tutorials

Turn on, log in and let our experts help make you a smarter Linux user

MIKE SAUNDERS had so much fun on his 7MHz Amiga, he still thinks 100MHz is insanely fast.

25MHz goodness

What's the oldest machine on which you've installed Linux? Our cover feature in **LXF102** showed you how to turn an old Pentium box into a useful Linux system, but I like to go even further back than that. It may sound sad, but nothing pleases me more* than cranking up an ancient PC or laptop that's generally regarded as worthless, and bringing it back to life with a super-light Linux distro. The older the better – well, without getting into ZX81 territory.

Old dog, new tricks

My favourite project was resuscitating a chunky 486 laptop clocked at 25MHz, with a whopping 8MB of RAM. Using some floppy disks and an old Debian release, I got the machine running stably and hooked up to the network, then installed the *Boa* webserver. *Et voila*: a silent box to serve up some (static) web content from my ADSL connection. It felt great to give this old workhorse a new lease of life – no wastage there! Let me know your tales of reviving old systems; I'll write them up next issue...

* Well, except for a pint and a lasagne.

mike.saunders@futurenet.co.uk

Code in tutorials

In *Linux Format*, code is presented in beige boxes. When lines of code are too long for our columns, the remaining text appears on the next line in a solid box:

```
procedure TfrmTextEditor.
mniWordWrapClick
```

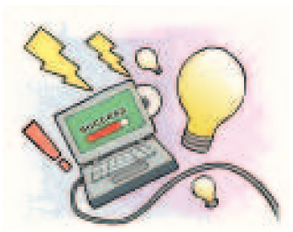
Otherwise, there is a gap between lines:

```
begin
  mniWordWrap.Checked := false
end;
```

Tutorial code is often on the DVD.

This month learn how to...

Customise KDE 80
You don't have to stick with the boring old desktop provided by your distro. Follow **Andy Channelle**'s guide to spice up your wallpaper and themes.



Pimp your Eee PC 84
Looking to add some extra software to your mini laptop? Want to run a full KDE desktop? Join **Mike Saunders** and add what Asus didn't supply.

Use Gimp textures.... 88
A splash of red here, a bump map filter there... *Gimp* guru **Michael J Hammel** demonstrates textures, shadows and lighting effects for excellent results.

Master Inkscape..... 92
Don't miss out on the new features in *Inkscape* 0.46: let **Dimitry Kirsanov** give you a guided tour of dockable dialogs, live path effects and 3D boxes.

Hack hardware.....96
Step into the light! In the final part of his series on the Arduino hardware kit, **Graham Morrison** shows you how to make a light sensor with funky LEDs.

Grok the kernel 98
It's the most crucial component of a Linux system, but how does it work? **Chris Brown** explains modules, processes and performance tuning.

Tip of the month: MySQL

MySQL uses a different root password to the system root user, and if you forget or lose this, you may think you are in serious trouble. Provided you have root access to the computer, it is fairly easy to reset the password.

Stop the *MySQL* server with

```
/etc/init.d/mysql stop
```

and start it again with

```
mysqld_safe --skip-grant-tables &
```

This runs the server without checking for passwords – not a safe thing to do normally, so make this quick. Now you can log in as root and set a new password.

```
mysql -u root
use mysql;
update user set
password=PASSWORD("NEW-
ROOT-PASSWORD") where User='root';
flush privileges;
quit
```

Stop and restart the server with

```
/etc/init.d/mysql stop
/etc/init.d/mysql start
```

and you can now log in in the usual way with your new root pasword. This only changes the root password, so any other users are unaffected and programs that use *MySQL* tables with their own user, such as various blogs, CMS suites or *MythTV* are completely unaffected by this change.

KDE: Sort your

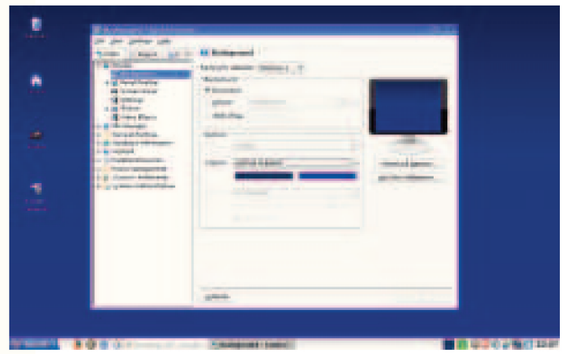
Andy Channelle puts some finishing touches to his personal desktop space.

Our expert

Andy Channelle has been taking his first steps in Linux software for the past six years and has been interested in technology since the advent of the Dragon 32.

Machines have a reputation for being cold, impersonal things, but there is a ton of stuff you can do to give your KDE or Gnome desktop a splash of personality. The first thing you see post-boot is the computer desktop, and depending upon your distro choice, it might be some abstract swirly pattern, a picture of a tree or something that just looks a bit glossy. These default backdrops are usually designed not to impinge on your creativity when you're working and so are usually inoffensive and, well, boring. However, every desktop OS has options available to replace this image with something more personal – which can be a great way of reacquainting yourself with the family if you spend a lot of time in front of your screen.

› Computer desktops – Ubuntu excepted – usually feature a lot of delicate swirly blues.



› For lower-powered machines, a gradient desktop is a good compromise between plain and resource hog.

In order to change the picture in KDE, we need to take a visit to the KDE Control Centre, which will either be hidden under the System menu or given a privileged position on the main part of the K Panel, which appears when you hit the K button. Once the Control Centre is open, select the Display option from the left-hand pane and choose Background. There are quite a few options in here, but the most obvious thing to do is hit the drop-down list next to the Picture label and choose a new background. This drop-down will display all the available images from the folder **/usr/share/wallpapers/** and so we could easily drop a selection of pictures in here and then select one from the drop-down. Hit the Apply button at the base of the dialog box and the background image will be update.

Pictures of desktops

We don't, however, have to stick with images from one particular folder. To select a snapshot from another location, click on the folder icon next to the previously used drop-down and navigate to the location of your favourite picure. Select this, hit Apply and the background will be updated once more.

Underneath the image selector are a few options that can be used to centre, stretch or tile an image across the screen. For those with a low-powered machine, it might be best to just remove the background altogether. If we do this, the colour options in the middle section will take effect, and it becomes possible to create a gradient by defining the two colours and selecting Vertical Gradient from the Colours drop-down. This option can provide some visual respite for tired eyes without overtaxing system resources.

At the top of this dialog box is an option to set different backgrounds for each of our virtual desktops, and to the right is the Advanced button, which allows us to change the colour of the text beneath our desktop icons or even add a shadow to make white text more visible on light backgrounds. The desktop background is just one option; KDE also has the capacity to make

» **Last month** We had heaps of fun with groovy Google Maps and *Google Earth*.

desktop out

broad changes to the look of your desktop all at once, including changing window title bars, scroll bars and application 'widgets' – the buttons, checkboxes and drop-downs that make up the user interface. Collectively these cosmetic tweaks are grouped into 'themes', which can be accessed from the Theme Manager in the Control Centre.

Let's start our look into themes with the Window Decorations – things such as the minimise buttons and title bars. For users who have moved from Windows, standard KDE arrangement of the title bar elements (title and application icon/menu to the left, minimise, maximise and close buttons to right) will feel instantly familiar. If, however, you're more used to OS X on the Mac, you might feel comfortable with these options moved around a little – fortunately, this is easy to achieve.

Mac it up

In the Window Decoration section, select Centre in the 'Title Alignment' box and hit Apply. The title of each window will now be centred in the title bar. To deal with the buttons, click on the Buttons tab at the top of the window and then select Use Custom Title Bar Buttons. Selecting this button will activate the layout title bar in the centre of the screen, allowing us to drag and drop the buttons to either the left or right edge of the bar. To create Mac-alike flavour, we've moved the the close, minimise and maximise button to the left edge and dragged a Menu button from the list below the layout bar to the far-right. Any changes made will be automatically shown on the sample title bars at the bottom of the window. Once you've finished editing, hit the Apply button to change the live desktop.

Once the Window decorations are defined, the colours can be changed by selecting the Colours option in the left-hand pane and adjusting the hues to your own tastes. Again, there are quite a few presets, and we can change the colour of an individual element by selecting its name from a drop-down menu in the Widget Colour section and choosing the appropriate colour. Once the confection is complete, we hit the Save Scheme button, give it a name and click on Save.

We'll start by creating a standard icon for a frequently used application. In order to do this we need first to locate the application we want to start. There are two ways to do this, either find the application on your filesystem – it's likely to be somewhere in **usr/bin** – or find the information using KDE's menu editor. To do this, open the control panel once more, then select Panel, choose the Menu tab and click on Edit Launch Menu.

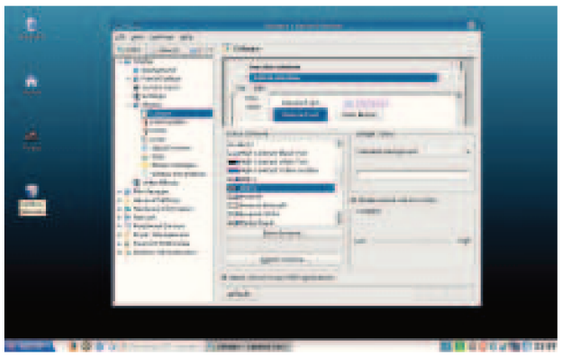
It's now possible to comb through the menu structure and click on an application to see the command that you need to add to launch it. *Firefox*, for example, is accessed with the command **firefox %u**, which is what we need to create our icon. With that information, we can now right-click anywhere on the desktop and choose Create New > Link to Application. In the resulting dialog we first need to provide a name and then click on the Icon button to choose an icon. If none of the standard icons look suitable, any PNG file can be used as a substitute – just choose Other Icons and hit the Browse button to find your image file. We can ignore the Permission tab and more straight on to Application. Here we enter the description and comment (which will appear as the tooltip) and then add the command to the appropriate text area. Click on OK and the icon will be added to the desktop, complete with name and tooltip. Moreover, this can be dragged on to the panel at the base of the screen to create a shortcut that will be accessible whatever you're doing.

Web shortcuts

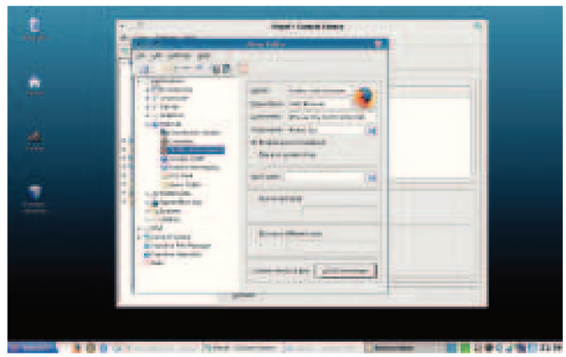
Let's move one step further and make *Firefox* launch into a specific web page. We could just open the properties to the shortcut (right-click and select Properties) and add a URL to the command under the Execute tab: **firefox http://www.facebook.com**. However, if you already have *Firefox* running, this will open the new site in a tab rather than a window of its own, which defeats the point of having a separate shortcut. So we need to pass an argument to the command to ensure it opens up a new window. Add the following: **firefox -new-window http://www.facebook.com** and hit OK. When you double-click the icon, the website or service will open up in a fresh window. LXF

Quick tip

Don't go crazy with busy patterns on your desktop – they'll only make it harder to find files on your desktop.



› No one said we had to stick with blues. The Colour section gives us a whole rainbow to play with.



› It's easy to add icons to the desktop that add your favourite apps. The command to launch *Firefox* is hidden away in here.

Konqueror: Get

Make KDE's combined file/web browser work the way you want it to.

Quick tip

You can configure more advanced web behaviours via the JavaScript settings, which can be used to supress popups and other annoyances.

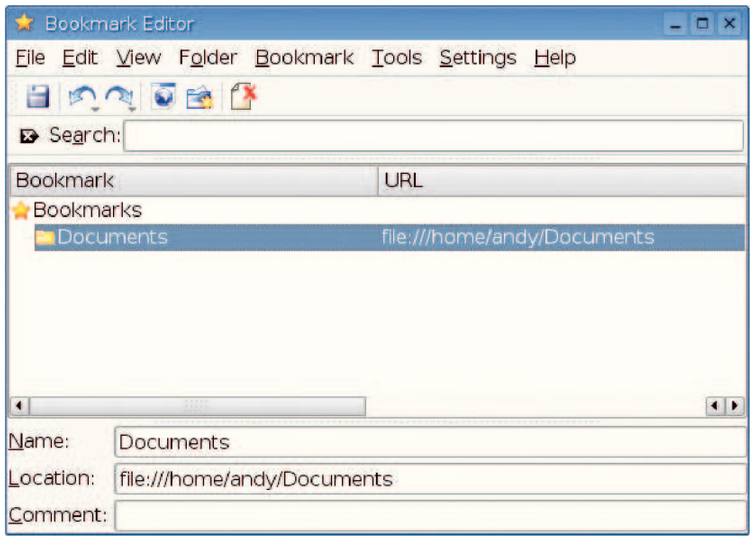
You may ask why you should be bothered with *Konqueror* in the first place: it's a the combined file/web browser used by older versions of KDE, but the latest version of KDE uses a new application called *Dolphin* for file browsing, and *Firefox* is the undisputed king of the web. Well, the answer is that Konqueror is a hugely powerful app that can help you unlock the potential in your machine.

In this tutorial we're going to looks at some of the hidden depths of *Konqueror* (the KDE 3.5 version) and show how it's possible to flip from web to local view with a few clicks; ensure *Konqueror* opens in the right mode; and how to configure distinct versions of the browser mode for either different users or use models. This is great if, for example, you have different sets of favourite tabs when browsing for pleasure and work, or if you want to allow each member of the family a browser profile of their own without the hassle of a full multiuser system. The advantage of this is that each user's profile can have its own home page(s), history, cookies and bookmarks, and you'll probably save on system resources and time, as switching profiles takes a lot less time than switching users.

One of the first things you may want to do when opting for *Konqueror* as a web browser is set the home page. Navigate to the page you want to use and then select Settings > Save View Profile "Web Browser" and hit OK. Next time the browser is launched, it will display the new homepage. When doing this, it's even possible to make the application remember its window size by selecting the appropriate checkbox before hitting the Save button.

Web configuration

The application's developers have tried to make *Konqueror* as flexible as possible, which is evident in the rather scary-looking options dialog that appears when you select Settings > Configure *Konqueror*, the window is packed with information. However, we're only interested in setting a few options for the web browser portion, so click the Web Behaviour option on the left. This is rather simpler, and we'll tackle things from top to bottom.



When in File Manager mode, *Konqueror* can still create bookmarks, which can make access to specific locations very quick and easy.

Configuring *Konqueror*'s web browsing can be a little daunting – it's best just to concentrate on the simple things!

Those with a passion for organisation will love the first Bookmarks option, as this give you the chance to specify a folder and bookmark name every time you create a new bookmark, rather than allowing the website or page name to decide things. The second option here defines how *Konqueror* displays bookmarks in the Bookmark Toolbar, which you can bring up by selecting Settings > Toolbars > Bookmarks Toolbar. By default this will attempt to house every item stored in your bookmarks folder, but selecting this option allows you to set this visibility on a page-by-page basis. To mark a bookmark to appear in the Toolbar, select Bookmarks > Edit Bookmarks, choose the appropriate entry and then do Edit > Show in Toolbar. It's also worth going into the Settings menu of the Bookmark Editor and choosing Autosave on Exit, or you'll need to manually save changes before you close down the editor. The Form Completion option simply defines whether *Konqueror* will remember details such as email addresses, users names, phone numbers, etc and then offer to add these to web forms.

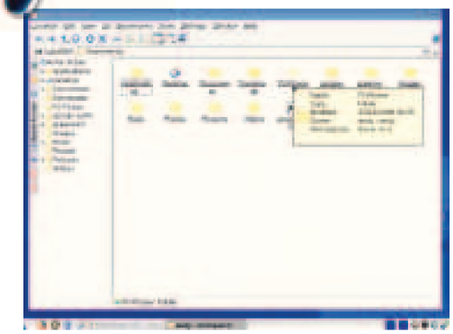
Space saver

In the Tabbed Browsing section, choose the first option to make *Konqueror* open new windows in tabs – a useful space saver – and if you need more control, check out the Advanced window.

The options in the lower half of the window are less important but cover elements such as changing the mouse pointer when you hover over a link, automatically loading images (switch this off if you're browsing on a slow connection) and changing the underline property of links. The final Animations section will allow you to force annoying animated GIFs to play only once or not at all.

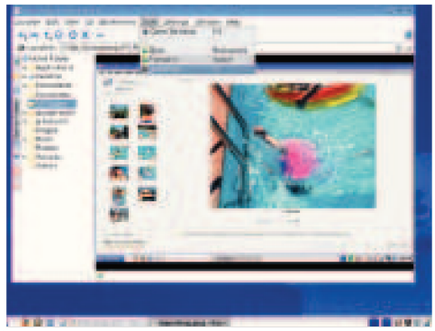
tweaking now!

Step by step: Configure Konqueror for web browsing



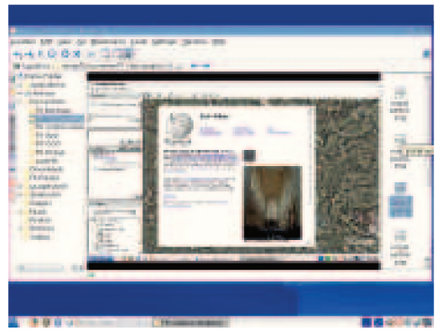
1 Start Konqueror

Distributions that use *Firefox* as their default browsers are likely to spirit *Konqueror* away under the Accessories or Utilities menu, and when started the application is likely to present its file browsing face. If you can't find the application under the menu, select the Run option from your K Panel (or open a terminal) and type 'konqueror'. Many other apps can be started in this way too.



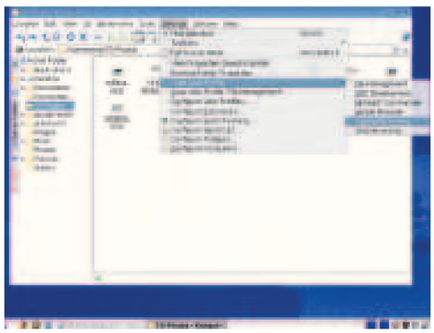
2 Preview images

When in file browser mode, it's possible to turn a folder full of images into an instant slideshow by double-clicking the first image and then doing Tools > Slideshow (or F2). This will display each image for a few seconds before flipping to the next. If you'd prefer some manual control over the show, use the Space bar to advance, or backspace to go back.



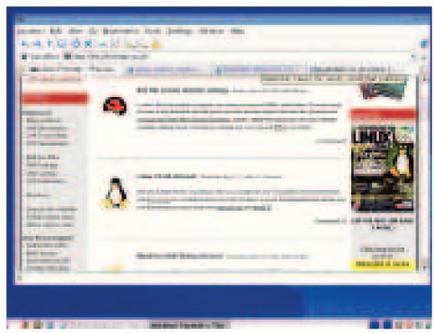
3 Visual navigation

Konqueror also has a special Photobook mode that can be used to visually navigate through a collection of images. This can be accessed using View > View Mode > Photobook. In this setting, the main window will show a large version of an image. A small pane on the right displays thumbnails of the folder contents and navigation can be accomplished using the file tree on the left.



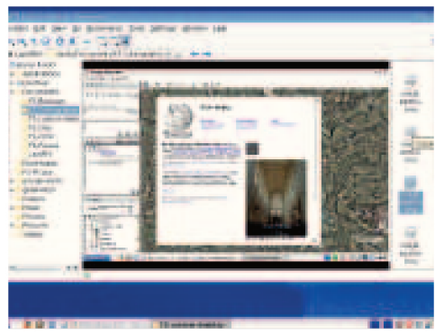
4 Choose browser mode

Konqueror's developers have set a number of profiles suitable for web browsing (simple and tabbed), file browsing and FTP. These can be accessed via Settings > Load View Profile. We're going to personalise the Tabbed Browsing profile, so select that and watch as the file manager turns into a web browser with a few stock KDE websites on its tabs.



5 Choose your pages

Go through each tab in turn and change the web address to something you're likely to use. You can add new tabs by clicking the empty space beside the last tab. Now do Settings > Save View Profile "Tabbed Browser". In the resulting dialog box ensure that you've selected Save URLs in Profile and click on Save. Next time you choose this profile, your sites will load automatically.



6 Multi-users

It's possible to have lots of different profiles on a single computer. Using the same process as above, populate the Tabbed Browsing profile and then, in the final stage, type a new name for the profile in the Profile Name box and then hit Save. The new profile will be added to your list and can be chosen in the normal way. LXF

Next month It's been a long time coming, but *Firefox 3* is here at last. Time to play!

Eee PC: Install

Part 1: Mike Saunders explains how to turn your Eee PC into a perfect mini Linux workstation, by adding extra software to the default installation.

Small, light, cheap and Linux-powered – the £220 Asus Eee PC (**http://eeepc.asus.com**) has started a trend in the computing world, with competitors rushing to bring out their own micro laptops for low prices. In last month's cover feature we analysed the Eee's impact on the market: specifically, how it's bringing Linux to millions of new users, and how they're discovering that Windows isn't the be-all and end-all of computing. We also showed you how to spruce up your desktop with a program menu and different desktop backgrounds, and also how to free up space on the task bar.

This month we're kicking off a new three-part series on going further with your Eee. If you're a lucky owner of an Eee, either an original 701 machine or the new 900 version, you'll find that there's so much to explore under the hood. While the machine's default software is great for typical users – *OpenOffice.org*, *Firefox*, *Pidgin* etc – there's a complete Linux distribution, Xandros, screaming to get out. In this tutorial we'll show you how to add extra software to your Eee, and change the desktop from the default *IceWM* to a fully-fledged KDE setup. So, get the pint-sized PC perched on your knee, connect to the nearest Wi-Fi access point, and let's begin...

Our expert

Mike Saunders snapped up an Eee PC back in November, and has customised the software in every way imaginable. He loves his laptop like a tiny plastic child.

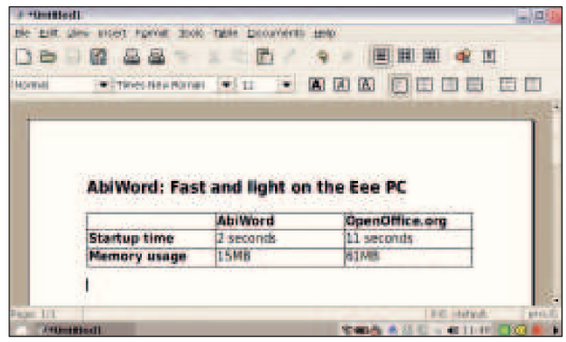
Part 1 Installing extra software

As mentioned, the Eee runs Xandros Linux, a distro that's built on solid Debian foundations but doesn't come close to matching Ubuntu and company in the popularity stakes. Asus contracted Xandros to build a custom flavour of the distro for the Eee – bits were stripped out, many customisations were made, but it's still largely Xandros Linux. If you're completely familiar with packages and repositories, you can skip over the next few paragraphs and move on to adding a new repository. But if you've picked up this mag as a new Linux user thanks to the Eee, read on!

Linux software is supplied in packages. Whereas in Windows you typically double-click a **setup.exe** file to install a program, in Linux you download a carefully constructed archive that contains all the essential parts of a program – executable code, images, documentation and so forth. For Xandros Linux, these package files have a **.deb** suffix, so the *Firefox 2.0* web browser, as an example, would be supplied as **firefox_2.0.deb**.

So Deb packages are somewhat like Windows Exe files, except that you can't run them directly – which is a very good thing in terms of security. Instead, you install Debs via a package manager called *Synaptic*. But there's more: sometimes a program will depend on other programs in order to run. Most Windows apps bundle all required software into the **setup.exe** file, leading to bloated monstrosities and massive code duplication. In Linux, you have a system of 'dependencies' – that is, Deb packages on which other Deb packages depend to install. For instance, say you have five programs on your machine that can display HTML documents. In the Windows world, each program would include its own HTML rendering engine, whereas in Linux, they would all depend on an external package to do the job, thereby eliminating code duplication.

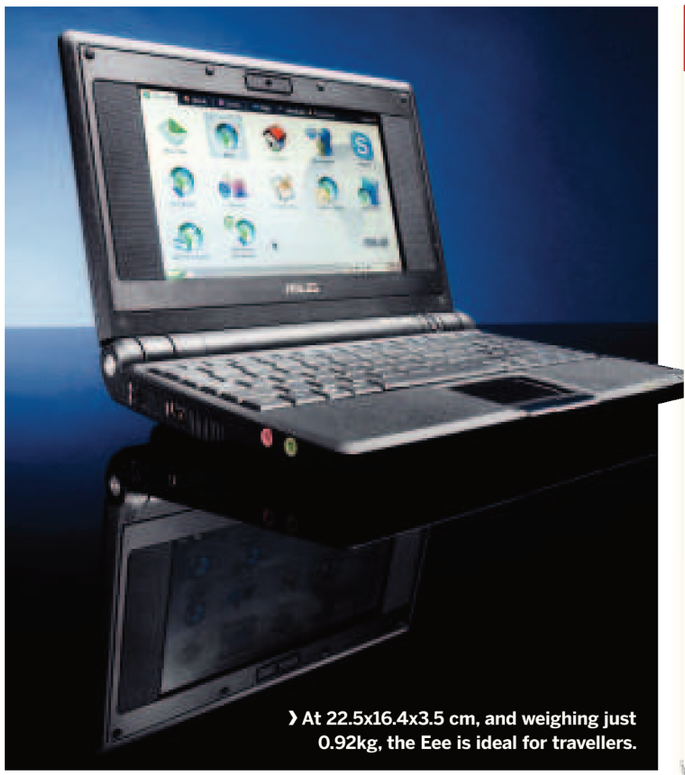
Now, keeping track of all these dependencies is hard work, but Linux makes it easier by using repositories. These are online



› **Sick of *OpenOffice.org*'s bloat and sluggish performance? Add extra package repositories and install *AbiWord*.**

» **Last month** Our cover feature showed how to customise the Eee's GUI.

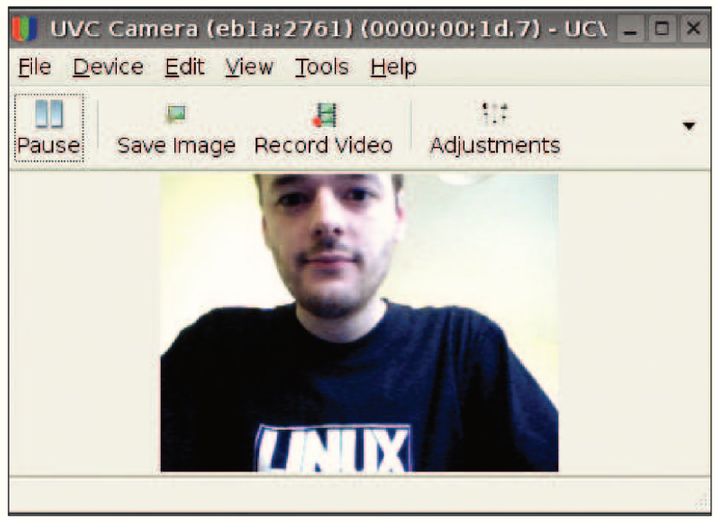
extra apps



› At 22.5x16.4x3.5 cm, and weighing just 0.92kg, the Eee is ideal for travellers.

Webcam in advanced mode

When you've switched to Advanced mode, you may be wondering where the webcam utility has gone. The program is still present – it just has a different name. Click on the Launch button in the bottom-left, then go to Applications > Multimedia > UCView. Then you'll be able to take snaps and record movies as before.



› **In Advanced mode, the webcam program is known as *UCView*.** **(See p101.)**

collections of software, keeping programs and their dependencies together. So we're going to add an extra repository to our Eee, thereby allowing us to download extra programs (along with their dependencies) without having to trawl through a zillion websites.

Adding the repository

By default, the Eee is configured to download software from one place online: the official Asus Eee updates repository. This is used for bugfixes and security patches, but it doesn't include any software beyond that supplied with the machine. So we're going to add a new repository with hundreds of extra packages – the sort of apps that you'd expect to find in any typical desktop distro. For this you'll need to have your Eee connected to the internet.

At the desktop, hit Ctrl+Alt+T to open up a command line window. Now enter the following command:

```
sudo kwrite /etc/apt/sources.list
```

Here we're firing up the *KWrite* text editor to modify the list of repositories that our Eee can use. (The **sudo** part means we want to edit the file as the superuser, aka administrator, because normal users can't edit system files.) You'll see that the file contains two lines – these are the locations of Asus's security updates. Add a third line to the file:

```
deb http://xnv4.xandros.com/xs2.0/upkg-srv2 etch main contrib non-free
```

Make sure you copy line that exactly, otherwise you'll receive errors later on. This repository is for Xandros Server, a Linux distro on which the Eee version is based. Consequently, it's highly compatible with the Eee's packages, and won't mess up your system providing you only install normal programs (and don't try to upgrade the kernel or critical system scripts).

Save the file (File > Save) and close *KWrite*. Now, back in the terminal window, enter:

```
sudo apt-get update
```

This command retrieves a list of available packages from Xandros's online repository, and updates your Eee's database accordingly. (If you see a warning message about GPG signatures, you can safely ignore it.) Now you're ready to add extra software!

There are hundreds of packages available – here are some of the highlights:

» **AbiWord** Fast and light *MS Word*-compatible word processor, a fine alternative to the weighty *OpenOffice.org*.

» **Gnumeric** *Gtk*-based spreadsheet that's also much speedier than its counterpart in *OOo*.

» **Emulators** The Eee rocks for emulating old (8/16-bit) consoles »

» and computers. See *Snes9x* (SNES), *Dgen* (Mega Drive/Genesis), *Nestra* (NES) and *Vice* (C64).

» **Development tools** If you want to do some C/C++ coding on the go, install the **build-essential** package. This is a meta-package that automatically installs *GCC*, *Binutils*, *GNU Make* and *Glibc* development files.

» **Server bits** You can even run *Apache*, PHP and *MySQL* on your Eee for web development on the road.

You can install these programs, and many others, at the command line with **sudo apt-get install <program>**, but a more elegant option, and one which makes it easier to search for packages, is to use the *Synaptic* package manager used by Xandros, Ubuntu and other Debian-based Linux systems.

After you've installed your software, you can close *Synaptic*. Have a look around the tabbed categories on your desktop: some graphical programs automatically add desktop launchers, eg *AbiWord* (in the Work tab). But if your new software hasn't added an icon, you will need to press Ctrl+Alt+T and enter the program name to run it.

Creating new desktop icons by hand is a chore – it's much easier to add a Start menu to the task bar and modify that instead. We covered this process in last month's cover feature, but if you don't have a copy to hand, here it is nutshellised:

1 Hit Ctrl+Alt+T and enter **sudo kwrite /etc/X11/icewm/preferences**.

2 Press Ctrl+F and search for TaskBarShowStartMenu (case sensitive) in the prefs file.

3 Change the TaskBarShowStartMenu=0 line so that the end reads **=1**.

4 Hit Ctrl+S to save the file, close the editor, and restart your Eee.

Now you'll see a Start menu in the bottom-left of your screen. This is the default *IceWM* menu and is filled with programs you probably don't have, but you can edit it easily. In a command line window, enter **sudo kwrite /etc/X11/icewm/menu** and modify the file to your tastes. The format for the menu entries is 'Name on menu, icon, command' – Use 'app' if you don't know which icon to use. For instance, to add *AbiWord* to the menu:

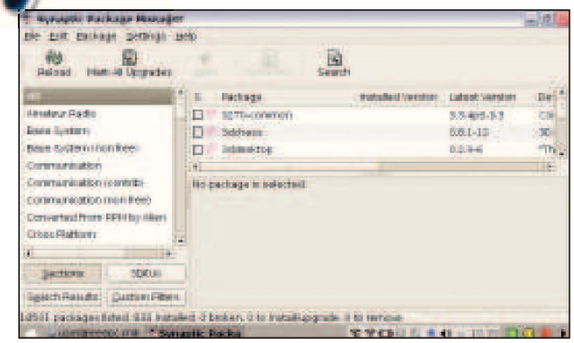
```
prog AbiWord app abiword
```

To remove a program in *Synaptic*, use the search facility to find it, then right-click its name in the package list and select 'Mark for Complete Removal'. When you hit Apply, the program and its configuration files will be deleted from your Eee.

Quick tip

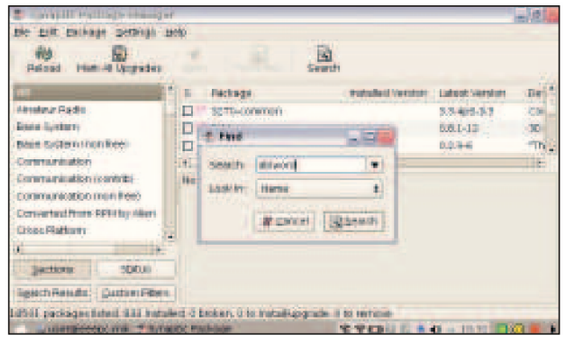
If you have a window bigger than the screen, and want to access buttons at the bottom of it, hold down the left Alt button, then click and drag the mouse to move the window around. This works in both the Easy and Advanced modes.

Step by step: Installing software with Synaptic



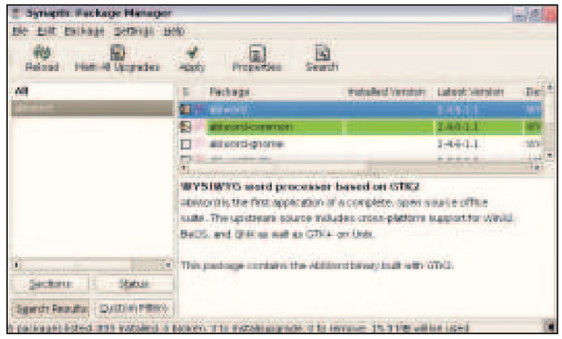
1 Fire up Synaptic

Hit Ctrl+Alt+T to open a command line window, then enter **sudo synaptic**. You'll see this window: click around the categories list on the left-hand side to browse the available software.



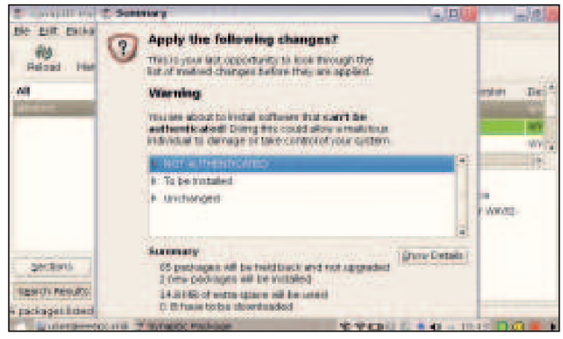
2 Search for software

To search for a particular program, click on the Search button at the top. Enter the name of the program you want to find, then Search. After a few moments, you will see a list of programs



3 Install a new application

To install a program, click on the checkbox next to its name and select 'Mark for Installation'. (Don't worry if you see a message about packages not being authenticated.) Then click on Apply.



4 Confirm the changes

You'll see this confirmation screen: use Alt+Left click to drag the window up and make the Apply button visible, then click on it. The new program(s) will be installed from the internet.

Part 2 The advanced desktop

Although *IceWM*, the default Eee window manager, is excellently fast and ideal for most users, you may need a more kitted-out Linux desktop. The Eee ships with large chunks of the KDE infrastructure – including libraries and utilities – but the complete desktop isn't included. This isn't a problem though: if your Eee is connected to the internet, you can run a few commands and download the extra pieces to get a complete KDE installation. In Eee parlance, this is known as Advanced mode.

We're going to set up the Eee so that it can be toggled between Advanced mode and the Easy desktop (*IceWM*). Note that KDE is considerably more memory-hungry than *IceWM*; depending on the programs you run, it can take up 30–100MB of extra RAM when it's in full swing. However, the Eee's 512MB is still roomy enough for KDE, *Firefox* and *OpenOffice.org* to run simultaneously, so unless you've got a program that requires every last byte of RAM, you shouldn't see any significant performance deficit from using KDE.

Activating the Advanced desktop requires a bit of work at the command line, but as we saw earlier, it's not a terrifying experience if you're CLI-phobic – just follow these steps...

1 Press Ctrl+Alt+T to open a terminal window.

2 Enter these commands:

```
wget http://download.tuxfamily.org/eeepcrepos/key.asc
sudo apt-key add key.asc
rm key.asc
```

This downloads and installs a security key for the packages we're about to get, to make sure that they're legitimate and haven't been tampered with.

3 Next, enter **sudo kwrite /etc/apt/sources.list** and, at the bottom of the list, add this line:

```
deb http://download.tuxfamily.org/eeepcrepos p701 main
```

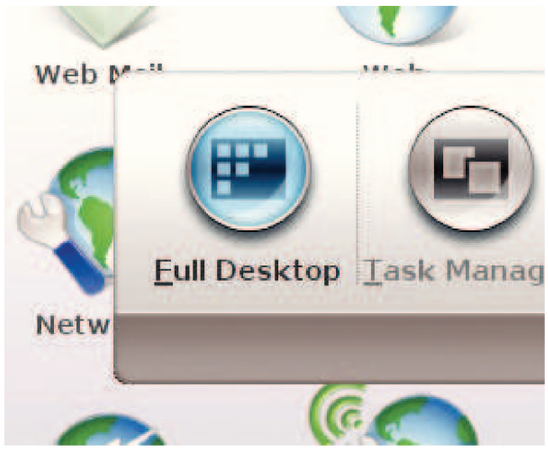
Save the file and exit the editor. This tells the packaging system where we can get the extra software required for the Advanced desktop.

4 Enter **sudo apt-get update** to get a list of the packages that are now available for download.

5 Finally, enter:

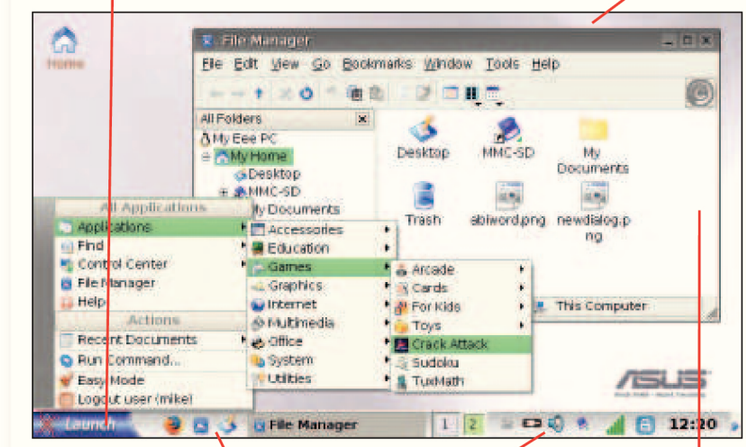
```
sudo apt-get install advanced-desktop-eeepc
```

You'll be prompted to download the packages (enter Y), which will take around 10 seconds on a DSL connection (or a few minutes if you're on a dial-up connection).



› After you've enabled Advanced mode, you'll see this new Full Desktop button in the logout dialog.

Exploring the Advanced interface



And you're done! Now you have the required software for Advanced mode, so let's try it out. Press the power button on your Eee, and in the dialog box that appears, you'll see a new icon called 'Full Desktop' – see the screenshot in the bottom-left of this page. Click the button and your Eee will restart the *X* server (the graphical interface), and after a few seconds you'll arrive at the KDE desktop. If you're a regular KDE user, you'll have no problems exploring the desktop – it's heavily themed with Xandros and Asus logos, but otherwise is a standard KDE installation.

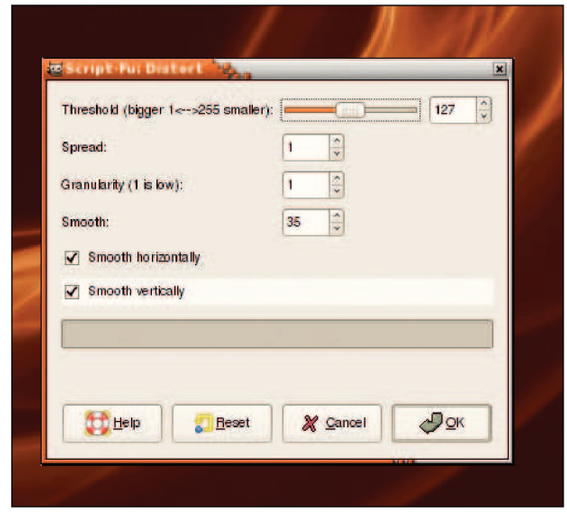
If you're new to KDE, you'll see immediately that it's a much more versatile desktop than the default *IceWM*. Along the task bar at the bottom you can right-click on icons to shift them around or delete them; indeed, you'll want to remove a few icons so that you can see the clock in full! KDE is vastly configurable; you can change fonts, colours, window decorations and widget themes through the KDE Control Centre utility, which also displays information about the hardware in your Eee.

See the screenshot for a quick overview of the interface. If you want to switch back to Easy mode, click on the Launch button (bottom-left) then Easy Mode in the menu that appears. Many Eee users like to have both desktops at hand – the Easy mode for a quick spate of web browsing or note taking, and Advanced mode to provide all the bells and whistles of a full Linux installation. Stay tuned next month when we'll look at the special Breeezy Eee distro, and ways to back up your machine's data. LXF

» Next Month Backing up your Eee and booting other Linux distributions.

Gimp: Add shade

In the days before the instant messaging people sent letters and sealed them with stamped wax. **Michael J Hammel** shows you how to digitise your wax seals.



› The Smooth setting may need adjustment. After you fill the selection with colour, we'll come back to fix this as needed.

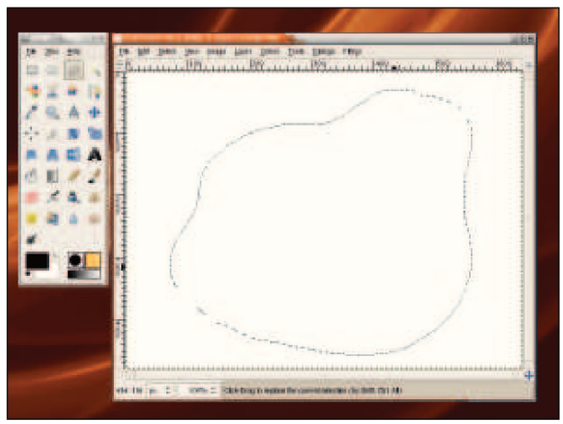
Our expert

Michael J Hammel is a contributor to the *Gimp* project and the author of three books on the subject, including his latest, *The Artist's Guide to Gimp Effects*.

By bringing back the *Gimp* tutorial series, I want to encourage *Linux Format* readers to expand beyond simple desktop artwork using the *Gimp*. Most of the effects you can do in *Photoshop* you can do with the *Gimp*, and the reason for that is simple: at their root, both applications twiddle with pixels. They even twiddle with similar tools. Their menus and user interface differ, but the end result is remarkably similar.

I often compare moving from *Photoshop* to the *Gimp* to moving from one city to another. When you move to a new city it takes time to find your way to the grocer or to the theater. But once you learn how to get there, the grocer and theatre are probably a lot like the ones you left behind. So too is it with *Gimp*. It takes a little time and patience to find the tools or filters that perform a given task, but the end result will be just as recognisable and familiar to you.

So there is no reason to think that, once you've learned your way around *Gimp*, you can't create your own works of art. *Gimp* doesn't have to be just a glorified icon editor or photo touch-up tool. It is certainly much more than that. It's a tool to express yourself. It's a tool to express your own art.



› You can use your mouse to draw the outline, unless you're lucky enough to have a drawing tablet wired to your

Truth is beauty, beauty truth

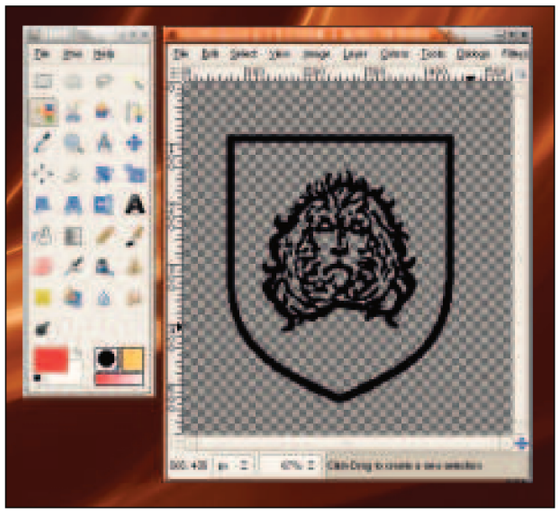
Now, it's true that art is a very personal thing. One man's art is another man's fish wrap. That doesn't change the fact that you can still create art with the *Gimp* that you'd happily frame and hang on your own walls. Your spouse, significant other and/or roommates, on the other hand, might have different ideas. That's a discussion for a different magazine, however.

This month I want to show how to be creative simply for the sake of being creative. This tutorial is simple, but it brings together the foundations for doing your own artwork: initial design, integration of external images, colouring, highlights and shading. Work with these to start to expose your inner Van Gogh!

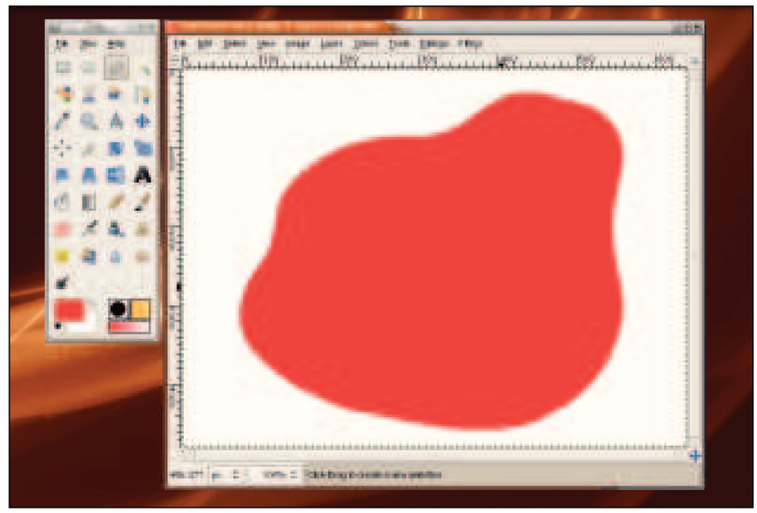
Just as you'd drip a candle on an envelope before stamping it, we need to start with our own blob of wax. This design will be

» Last month We introduced the versatile new features in *Gimp 2.4*.

and texture



› **The coat of arms was no effort at all – it's just a clip art shield (or escutcheon, if you prefer) and lion's head.**



› **The smoothed selection left no jagged sections in this outline.**

suitable for the web but as with all my tutorials you simply scale the process for larger images intended for print. Select File > New from the Toolbox and choose the 640x480 template to create a new template window. The foreground and background colours should be black and white, respectively, before you do this so you can get a white background. If this doesn't happen, click on the default colour boxes (in the bottom-left of the colours area of the toolbox). Add a transparent layer to the window (Layer > New Layer) and name it "Blob". Choose the Freehand Select tool (it looks like a lasso in the Toolbox) and draw a blob-shaped outline in the image window.

The outline will likely have some jagged sections which we want to smooth out before we fill it with colour. Use the Distort Selection tool (Select > Distort) to smooth the outline. Set the Threshold to 127, the Spread and Granularity to 1 and the Smooth to 35. Both the Horizontal and Vertical options should be checked. Feather the selection by two pixels (Select > Feather).

Choose a colour

Click on the Foreground Colour box in the Toolbox to modify the colour. In the dialog that opens, set the R, G and B fields to 227, 47 and 47 respectively. This light red colour may not be suitable for your project, but I'm using it here to make this tutorial easier to see when printed in the magazine. We'll adjust the colour at the end of the tutorial to fit your needs. Click on the OK button to apply the change.

Drag the Foreground Colour box from the Toolbox into the selection. You can also use the Bucket Tool for this, but dragging from the Toolbox just saves you a few clicks. Clear the selection (Ctrl+Shift+A or Select > Clear). This is where you check to see if you have a jagged outline. If the smoothing performed previously didn't clear all the jaggies, type Ctrl+Z four times to get back to the original outline. Then open the Distort Selection dialog again and adjust the Smooth setting higher. Repeat the feather, colour fill and clear selection steps.

The blob doesn't look like a wax blob yet because it doesn't have depth. We'll add that in a bit, but before that we need to prepare the stamp. The stamp can be anything, but for the old-time effect we'll create a coat of arms design. Choose one that isn't too complex because we'll be blurring it later and a complex design may be difficult to recognise. I created my own from an outlined shield and lion's head.

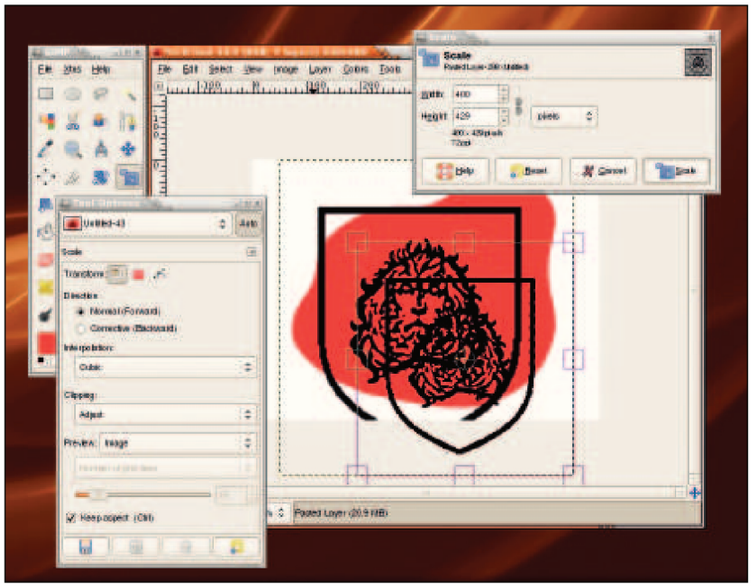
Design your arms

The outline was traced from existing shield designs and the lions head taken from clip art. The two were combined into a single image and desaturated. I then applied a Curves adjustment to the image to sharpen the edges of all the lines. This result worked well on the lion head but left some jagged edges in the shield outline, which I decided to leave in, because it gives a slight impression that the stamp was hand-carved.

In order to be used as a stamp in this design the coat of arms needs to have transparent areas, so I selected the background colour with the Select by Colour tool and removed it (Ctrl+X). Copy the coat of arms image (Ctrl+C) and paste it (Ctrl+V) »

A word about terminology

The built in and online help for *Gimp* is extensive, but the choice of terminology used in those documents is not always ideal (I certainly didn't vote for *Gimp* as the program name, as it is an unfortunate acronym for anyopne familiar with *Pulp Fiction*). However, in order to be of most use to users I feel it is important that throughout this tutorial series I use the same terminology as the *Gimp* help docs. I'll endeavour to expand my comments wherever the terminology is unclear.

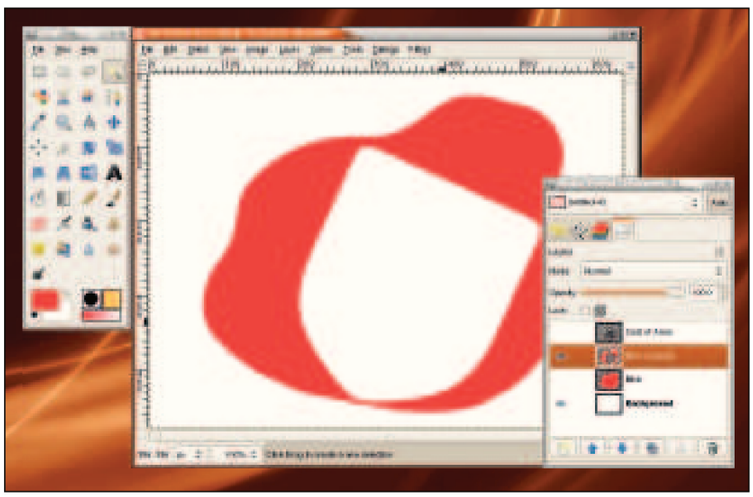


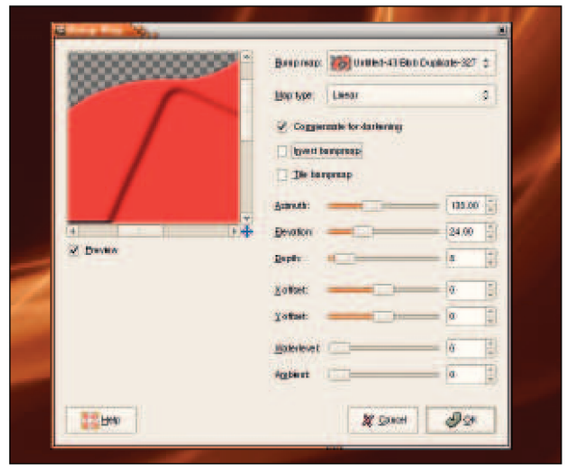
› After rotating and moving the coat of arms layer, you may need to resize it.

» into the blob image as a new layer (Layer > New Layer after pasting) named 'Coat of Arms'. The pasted layer will probably not be the right size for the stamp nor will it be positioned correctly. In this example the stamp is too large and needs to be rotated. Choose the Resize tool from the toolbox (it looks like a small box with an arrow pointing to a larger box). In the Tool Options dialog click on the Keep Aspect box so that we don't stretch the image while resizing it. Now click in the image window. Grab handles appear on the edges and corners of the layer. Click and drag one of the handles to resize the layer, and when the coat of arms is an appropriate size, hit the Enter key. Use the Move tool to drag the layer into the middle of the coloured blob. In the screenshot above you can see that I zoomed out before doing the resize to make it easier to see the grab boxes on the coat of arms layer. Choose the Rotate tool from the toolbox and rotate the coat of arms so it aligns and fits inside of the coloured blob. Repeat rotating and resizing as needed. Set the layer size to match the image size (Layer > Layer to Image Size).

To convert the coat of arms into an impression in the blob we'll first need to blur it (Filters > Blur > Gaussian Blur) by three pixels. Then we'll use it as a bump map applied to the coloured blob layer. The coat of arms layer should still be active (click on it in the Layers dialog if it isn't). Choose the Fuzzy Select tool from the toolbox (it looks like a stick with a light at the tip) and click in the transparent area of this layer (in this example, this will be any area that doesn't include the lion's head or shield). This creates a selection of all the transparent areas outside of the shield in the coat of arms. Invert this selection (Select > Invert) to select the shield shape.

› To see the cutout effect you'll need to turn off the visibility for both the Coat of Arms and Blob layers in the Layers dialog.





› The initial stamp just applies the shield outline.

You'll want to smooth this selection too in order to round off any sharp corners. Why? Because when you stamp in the wax the wax is slightly fluid and will flow across those edges. Smoothing this selection is what helps create this effect. Open the Selection Distort dialog again and apply it to this selection.

Choose the Blob layer in the Layers dialog and click on the duplicate button at the bottom of that dialog. Name this layer "Blob Duplicate". The selection should still be in place. Type Ctrl+X to cut the shield shaped selection out of the Blob Duplicate layer.

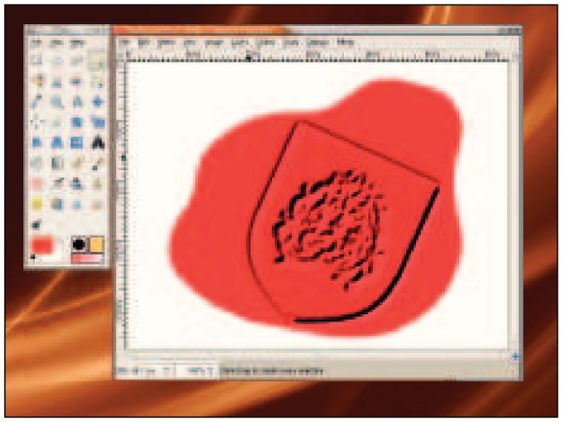
Add some depth

Now it's time to add some depth to the image. Turn off the visibility for the Blob and Coat of Arms layers in the Layers dialog, then Click on the the Blob Duplicate layer in the Layers dialog to make it the active layer. In the image window, apply a Gaussian Blur (Filters > Blur > Gaussian Blur) of 10 pixels to the Blob Duplicate layer.

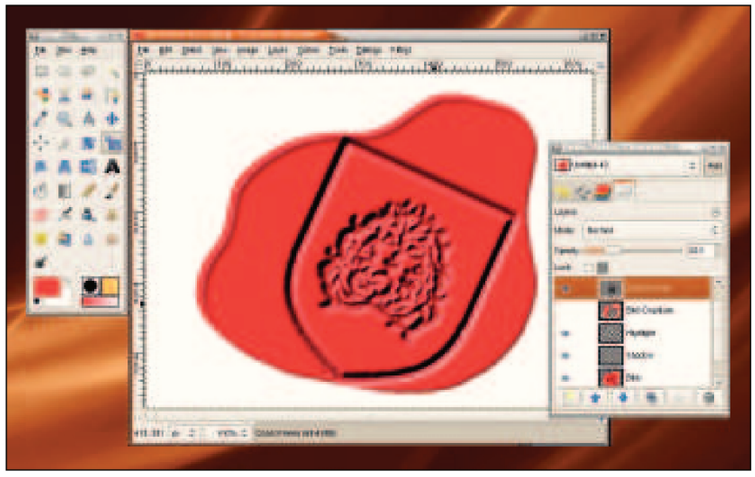
Click on the original Blob layer in the Layers dialog to make it the active layer. Turn on that layer's visibility as well. Open the Bump Map filter (Filters > Map > Bump Map). Set the Bump Map option menu to the Blob Duplicate layer. Set Compensate for Darkening, but don't set the Invert or Tile bump map options. Set the Azimuth value to 135, the Elevation to 5 and the Depth to 5. All other sliders should be set to zero. Apply these settings to the original Blob layer by clicking on the OK button in the dialog.

Duplicate the Coat of Arms layer and name it "Coat Of Arms Duplicate". Apply a Gaussian Blur of 10 pixels to the duplicate layer and invert the colours (Colours > Invert). Choose the original Blob layer again from the Layers dialog. Open the Bump Map filter again. Use the same settings as before, except that this time you will want to set the Invert Bump option. Apply these settings to the original Blob layer.

Turn on the visibility of the Coat of Arms layer and set its opacity to 25%. This adds even more depth the stamp effect by adding wider shadows. Choose the Coat of Arms Duplicate layer in the layers dialog to make it active, and turn on its visibility too. Offset this layer (Layer > Transform > Offset) by two pixels in both the X and Y directions. Choose the original Coat of Arms layer again and make a selection from it (Layer > Transparency > Alpha to Selection). Choose the Coat of Arms Duplicate layer from the



Bump mapping the coat of arms added more depth to the shield area, but we're not done adding highlights and shadows.



The shadow effect simulates the wax being pushed aside when the stamp is applied.

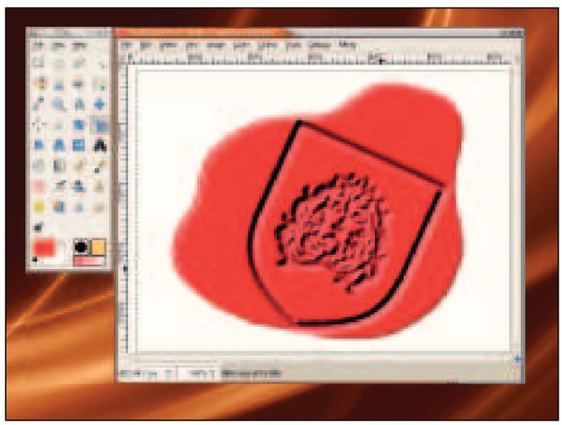
layers dialog and cut the selection (Ctrl+X) from it. Set the duplicate layer's Mode to Grain Merge.

Tweak the edges

We're not quite done yet. The blob of wax now has some depth applied to it internally, but the edges still look flat. When you stamp into the wax you'll often get some of the wax piled up at the edges as the wax in the middle is pushed away by the stamp. We'll simulate that effect now. First, make sure the Blob Duplicate layer's visibility is turned off. We won't need it for the rest of this tutorial so you can delete it if you want.

Duplicate the original blob layer again and name this new layer "Highlight". Create a selection of this layer (Layer > Transparency > Alpha To Selection) and grow the selection (Select > Grow) by 2 pixels. Fill the selection with white by dragging the background colour from the Colour Area of the Toolbox into the selection. Clear the selection (Ctrl+Shift+A or Select > Clear). If you didn't grow the selection large enough there may be a thin line around the edge this layer where the selection was. If that happens, use undo to go back to the selection and grow it larger by another pixel or two, then fill it again and clear the selection.

Offset this layer by -2 pixels (Layer > Transform > Offset) both horizontally and vertically. (Note that is -2 and not +2 pixels.)



This step adds a reflection to simulate lighting but we've got one more step to add some depth.

Choose the original Blob layer and create a selection of it again. Grow this selection by 2 pixels (or the number of pixels you grew the previous selection). Choose the Highlight layer and cut the selection from it. Realign the highlight layer by offsetting it by +2 pixels. The layers are now aligned, though you can't really see the Highlight yet.

With the Highlight layer still active, choose the Scale tool from the Toolbox and then click inside the image window. The Keep Aspect option should still be set for this tool from when you used it previously. Click and drag the upper-left grab box in toward the centre of the image until you see the highlight. The highlight should be positioned just inside the edge of the coloured blob. Hit Enter to apply the resizing and then apply a Gaussian Blur to this layer of 3 pixels.

Duplicate the Highlight layer and name the new layer "Shadow". Apply a Gaussian Blur of 10 pixels to this layer, then invert the colours. Offset the layer by 3 pixels in both the X and Y directions. In the Layers dialog, drag this layer below the Highlight layer.

Finishing up

Earlier I said we would start with a bright colour so that we could more easily see the final effect. Now that we've done that, we want to combine the layers (except for the white background) in order to adjust the Hue and Saturation.

In the Layers dialog, switch on the visibility for all the layers except for the Background and (if you haven't already deleted it yet) the Blob Duplicate layer. Merge the visible layers (Image > Merge Visible Layers), expanded as necessary. Choose either the Hue-Saturation (Colours > Hue-Saturation) or Colourize (Colours > Colourize) dialog and adjust the Hue and Saturation sliders to your needs. LXF

Wax seal tips

This tutorial ended up with some jagged edges along the shield outline. This happened because of the way I created the original coat of arms that I copied into the image.

To avoid this problem, try creating your shield using paths to draw the outline, then convert this to a selection and fill it with black. Make a selection of this, shrink the selection by 3 pixels and feather it by 1.5 pixels. Then cut the selection from the black shield. This should eliminate most of the jagged edges found in the shield outline.

» **Next month** We'll go for a more geometric-type design – a set of gears.

Inkscape: What's

Inkscape 0.46 is a massive improvement of the popular vector graphics editor. **Dmitry Kirsanov** show us the whys and wherefores of great gradients.

Arguably the most advanced open source vector editor across all OSes, *Inkscape*'s unobtrusive UI, expansive feature set, and support for the open standard SVG file format, make it an excellent choice.

Vector editors like *Inkscape* differ from raster editors, such as *Gimp,* because they treat lines as a scalable pair of points joined by an equation, rather than a collection of pixels that form an image. Vector editors therefore excel at designs that need to be scaled for printing, such as posters and logos, while raster editors are better suited to working on photos, video and complex images.

Now, more than a year in the making, *Inkscape 0.46* is finally nearing release. And what a release! Dozens of major and hundreds of minor features and improvements (including the results of the highly successful Google Summer of Code 2007), constitute some serious re-architecturing under the hood.

One indicator of the size of an application is the number of text strings in its UI; by this count, *Inkscape* has grown over 40% in this version. By necessity, this brief overview can only be a teaser.

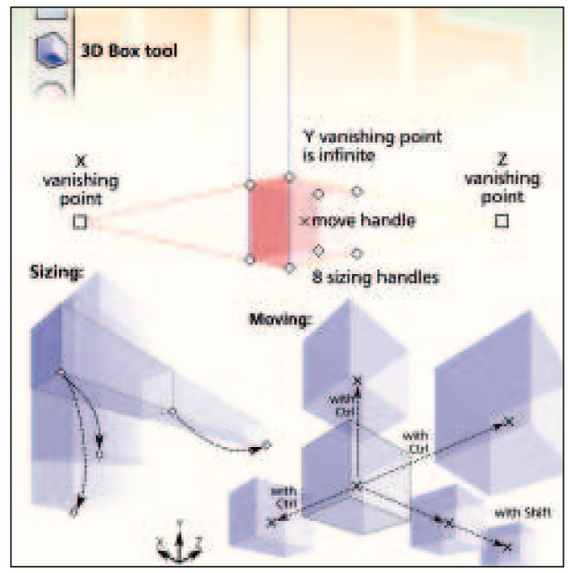
Major changes since Inkscape 0.45

Our expert

Dmitry Kirsanov is a freelance graphic designer, author, and SVG developer, as well as a long-time Linux user and a contributor to the *Inkscape* project.

1 Dockable dialogs

Perhaps the most visible UI change is the introduction of dockable dialogs. Now when you open, for example, Fill and Stroke, it opens by default in the vertical dock at the right side of the main window. Other dialogs also go to this scrollable dock, and using the mouse, you can rearrange, restack and resize the docked dialogs, as well as dragging them out as floating docks in separate windows. Each dialog will remember its docked/floating status across sessions.



2 The 3D Box tool

Inkscape is, at heart, a 2D drawing tool. It is, however, often used to draw 3D objects. To assist in that, *0.46* adds a new object type: the 3D box; a basic element of perspective drawing, unchanged since the Renaissance. With the 3D Box tool, you can create boxes, resize and move them in 3D space, and adjust their vanishing points and perspective lines. Other tools view a 3D box as a group of six sides, where each can be selected separately and styled as a regular path.

new in 0.46?

For all the spangly new stuff in *0.46*, the default UI has changed very little. And that's probably a good thing – you don't need to retrain yourself, almost everything still works exactly the same. The new functionality doesn't bloat the program; it reveals itself only when you need it. In some cases – such as with the on-screen editing of gradient stops – *Inkscape 0.46* simply fulfils what was planned from the beginning but wasn't previously completed.

One important thing that can't be illustrated by screenshots is *Inkscape*'s speed. Ironically, a few years ago when *Inkscape* was much slower, most users considered it pretty snappy. Now, despite the increase in screen update speed and responsiveness, complaints about slowness and memory consumption are more common. The reason is simple: *Inkscape* has matured enough to be used for some really advanced tasks, and artists creating complex artwork in *Inkscape* start to hit the ceiling more often.

Although *0.46* brings some welcome improvements in rendering speed and UI responsiveness, there's been no real breakthrough in this area. The only thing that renders consistently faster is the outline mode (View > Mode > Outline), which now uses the Cairo graphics API for rendering. Unfortunately, Cairo wasn't quite ready to render the regular display mode, but this can be realistically expected in the next version.

And there's more…

Many of the *0.46* goodies couldn't fit into this article's limited space. However, here are a few honourable mentions:

» *Inkscape* can now preview printed output on-screen if you specify the ICC colour profile of your output device (this is called "soft proofing").

» There's a new command for creating a marker of the selected object. Now it's easy to create custom markers using any *Inkscape* features – gradients, transparency, even filters.

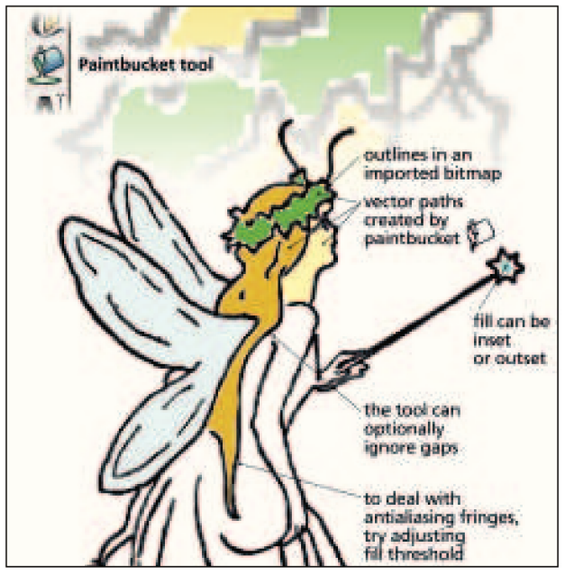
» New features in the Calligraphy tool, notably tracking a guide path and tracing the background with variable pen width, facilitate creation of lattices similar to those used in traditional engravings.

» Many simple stock patterns (stripes, chessboard, polka dots etc) have become available in the Fill and Stroke dialog when you switch an object to pattern fill or stroke.

» If installed on your system, *UniConverter* – a new piece of Python software – can be used by *Inkscape* to import *Corel Draw* (CDR) files.

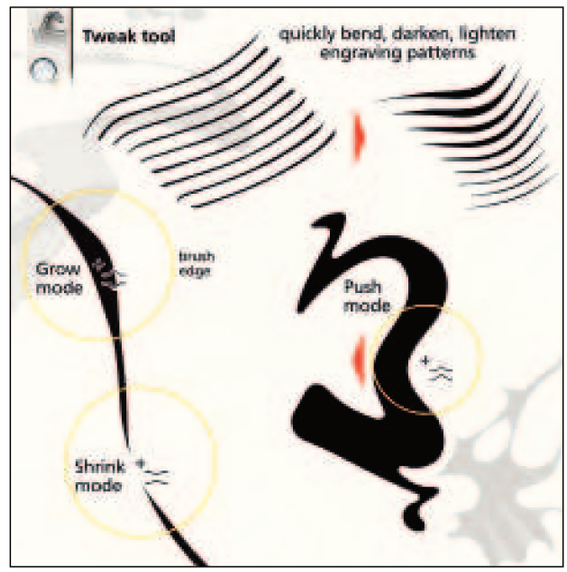
» Any *Inkscape* commands, as well as selecting objects by their IDs, can now be performed from the command line. This means you can script pretty complex GUI scenarios (for example: load a file, select an object, delete it, save the file, then quit) all completely automatically.

» For *Adobe Illustrator* converts, *Inkscape* can now optionally the use Space key for panning: although you'll need to enable this in Preferences. After it's enabled, pressing Space and dragging with mouse will pan the canvas (by default, Space switches to Selector as before).



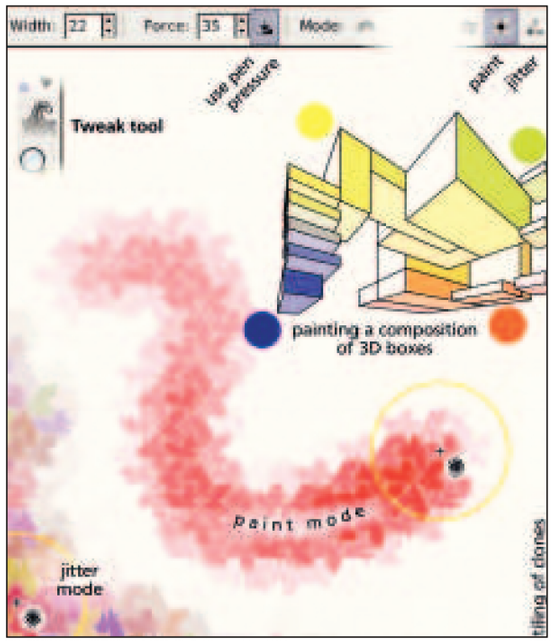
3 Paintbucket tool

Another new tool you'll see is Paintbucket. Like most other *Inkscape* tools, it works in the way you'd expect from any raster editor. Click on the canvas and it will, starting from the click point, create a vector path that fills the area with colour. When determining the boundaries to fill, Paintbucket looks at what's visible on the canvas – so it will ignore fully transparent shapes but enables you to fill flat-colour areas in an imported bitmap.



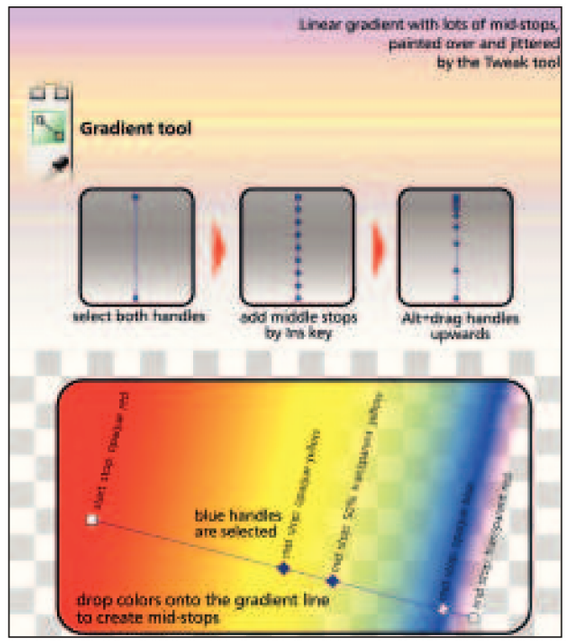
4 Tweaking paths

Inkscape 0.46 liberates you from the monopoly of the powerful but limited Node tool for path editing. With the new Tweak tool, you can sculpt any number of paths by pushing, thinning, thickening, repelling, attracting and roughening. You don't have to worry about nodes and handles anymore; simply apply the wide soft brush of the tool (you can adjust the brush size and force) and selected paths will reshape smoothly and naturally, as if made of clay. »



5 Tweaking colours

The Tweak tool doesn't only reshape paths. Two of its modes enable you to smoothly change the colours of objects. Up until now, the only way of colouring in vector editors was: select some objects, select a colour and assign it to the objects. *0.46* changes that. Now you can gradually 'rub' colour into objects so it mixes with their colour in Paint mode, or randomise object colours in the Jitter mode. Painting over multiple small objects (like a pattern of clones) feels much like painting with a soft brush in a raster editor (with a tablet, the tool can use pen pressure for the painting force).



6 Gradient mid-stops

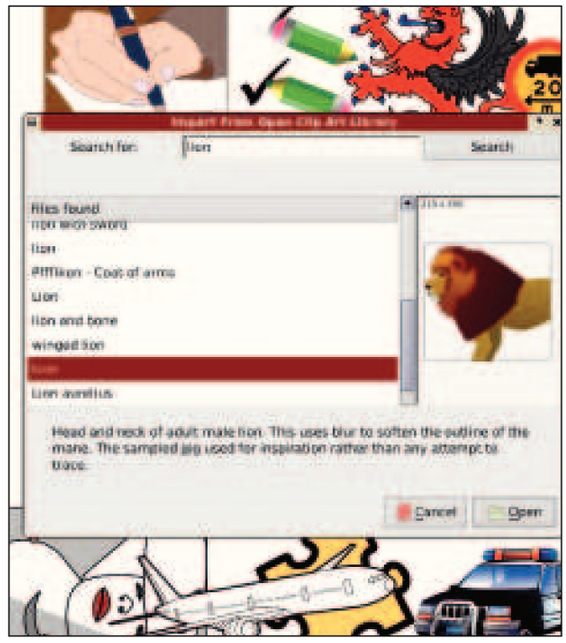
Since *0.42, Inkscape* can edit gradients on canvas by dragging the handles and assigning them colours. Until now, only the end-stops had their own handles. It was possible to create mid-stops, but only via the clunky Gradient Editor. In *0.46*, mid-stops get handles too; they can be created by dragging and dropping colour from the palette on to the gradient, or by double-clicking the gradient line. Other conveniences include: selecting multiple handles at once, using the Ins key to insert stops, using Alt+drag to sculpt handles and painting/jittering colours of multiple stops with the Tweak tool.

Quick tip

To change the colour of a selection without opening any dialogs, grab the Fill or Stroke swatch on the left end of the status bar and drag it off into the document area; watch the status bar messages for further guidance.

7 PDF import

Inkscape's new PDF importer enables you to choose the page in multi-page PDFs, and preserves all vector artwork, bitmaps, and even editable text. Since the native AI format of *Adobe Illustrator* (from v9.0 on) is also based on PDF, *Inkscape* can now open any modern AI file. Add a Cairo-based export module and *0.46* becomes a complete solution for editing single-page PDFs.

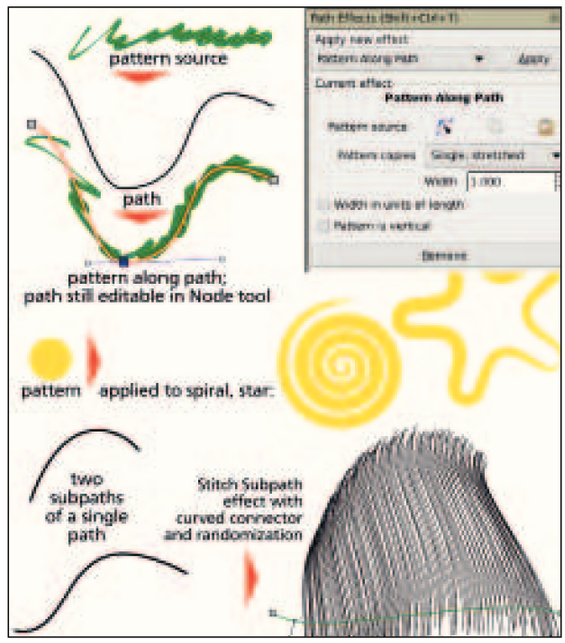


8 OCAL clipart import/export

Being open source, *Inkscape* promotes open content too. For some time, its Metadata dialog has enabled signing an SVG file and giving it an open content licence. In *0.46* you can import clipart from, and export directly to, **www.openclipart.org**. The OCAL Import dialog enables you to search by image tags and view thumbnails; then the selected clipart gets inserted directly into your document.

9 SVG filters

SVG filters are one of the things that make SVG different from other vector graphics formats. A filter is in essence a bitmap operation, applied to a rendered image, without losing vector editability. *0.45* supported only one filter: Gaussian Blur. In *0.46*, most of the filters defined in SVG are supported and a powerful dialog enables building effect stacks – resulting in lots of sophisticated effects.

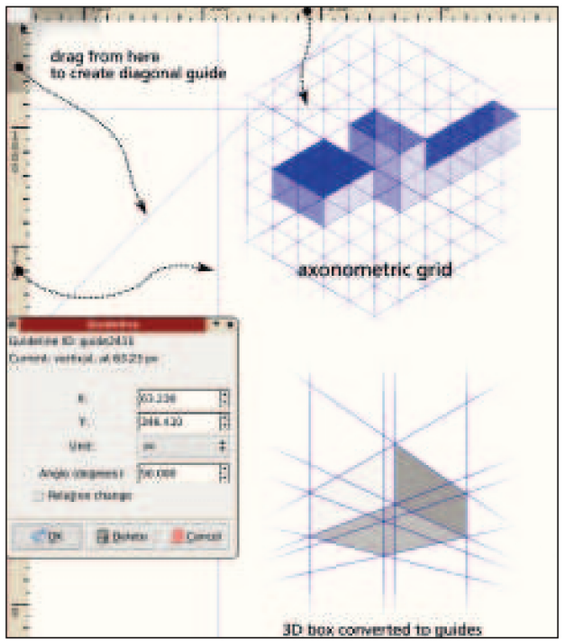


10 Live path effects

A live path effect is a non-destructive transformation of the source path (ie the shape of the figure, not its style). A path with an LPE may look entirely different but its source path is stored and is still editable by the Node tool. Pattern Along Path, which bends one path along another, and Stitch Subpaths, which connects subpaths via a network of connecting lines, are among the most useful.

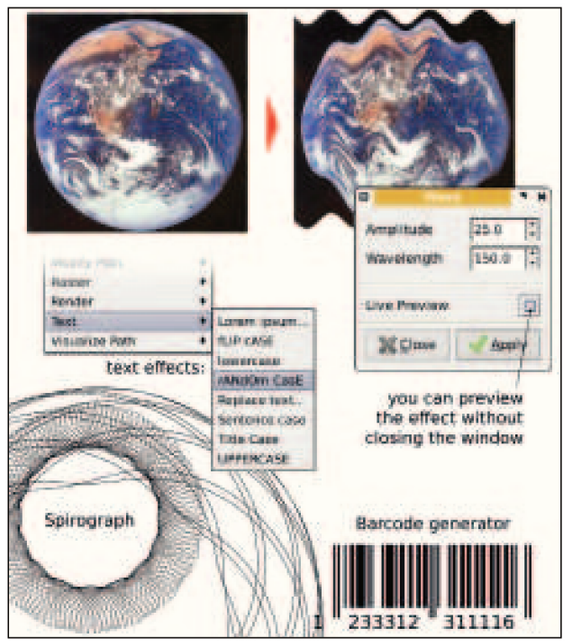
Quick tip

To assign one object's live path effect to any number of other paths or shapes, copy the source object (Ctrl+C), select the target, and do Paste Path Effect (Ctrl+7).



11 Grid, guides and snapping

Many people use *Inkscape* primarily for technical illustrations where everything must be perfectly aligned. Such users are likely to appreciate the new slanted guidelines, axonometric grid, and the ability to convert objects to guidelines or to have more than one grid in the same document. Snapping behaviour has greatly improved in *0.46* – it's faster and more consistent.



12 New extensions

As always, a new version of *Inkscape* brings with it a host of new extension effects (Python scripts for processing the document). There are bitmap effects (such as Desaturate, Emboss and Sharpen), utility effects for text objects (changing case, search and replace) and more. *0.46* also supports XSLT for extensions, so an XSLT filter is provided for import and export to XAML format. LXF

Quick tip

To reuse one object's filter stack on any number of other objects, copy the source object (Ctrl+C), select the target objects, and press Ctrl+Shift+V. This way, you can copy and paste any filters from the example files that come with *Inkscape*.

Arduino: An LED

In the final of part of our series, **Graham Morrison** builds a light sensor.

What you need:

- An Arduino
- Breadboards
- 5x1k resistors
- Light sensor

Our expert

Graham Morrison is a Free Software author, KDE zealot and electronic music enthusiast. He has discussed synthesizers with more than one leading member of the FOSS community.

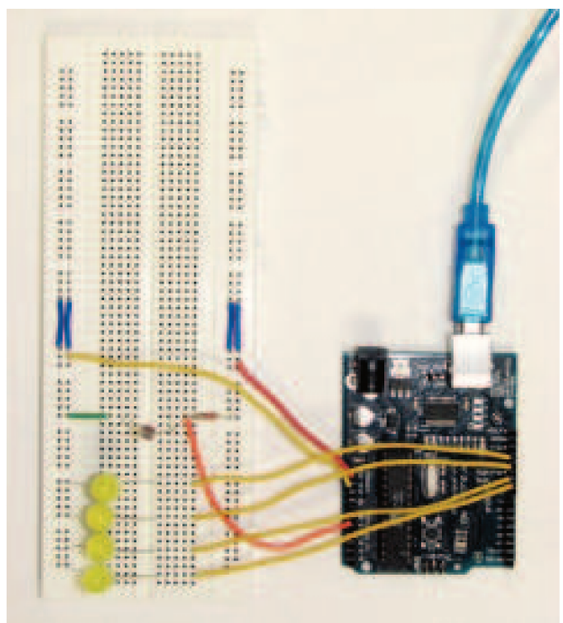
This is the of our last Arduino tutorials for now. To inject a little excitement, we're going to use light sensors. As their name suggests, they react in some way to the presence of light, but they're not really as clever as they seem. A light sensor is really just a variable resistor, and you can often find them described as 'light dependent resistors (LDRs)', which pretty much describes their function. They can be used for all kinds of things, from measuring the amount of ambient light in a room to building a web of security sensors and lasers to safeguard St Edward's Crown in the Tower of London. But more importantly, light sensors are commonly found in Arduino starter packs, which means you seldom need anything else to build something useful.

Step 1: The wiring

If you wire a light sensor into a simple LED circuit, for example, you'll find that the LED brightness will vary according to the amount of light falling directly on to the sensor. You'll also find that the LED brightness will fluctuate slightly, regardless of the amount of light on the sensor. This is because the circuit is 'floating', and small amounts of electrical interference are affecting the resistance in the circuit. The solution is to add a 1k resistor between the power source and the light sensor. This removes the floating state of the circuit and stops interference affecting the resistance from the light sensor.

You can try this out for yourself. Insert the light sensor into your breadboard so that its two pins bridge the central notch. Bridge one side of the notch with a resistor connected to 5V on the Arduino and attach a wire from the same terminal to Analog In 0. On the other side of the notch on the breadboard, just run a wire to GND on the Arduino. Finally, insert the long leg of an LED directly into Digital port 13 on the Arduino, and the short leg into the neighbouring GND hole. Here's the code to make something happen with this setup:

```
int ledPin = 13;
int analogInput = 0;
int aInput;
void setup(){
pinMode(ledPin, OUTPUT);
pinMode(analogInput, INPUT);
beginSerial(9600);
}
void loop(){
aInput = analogRead(analogInput);
digitalWrite(ledPin, HIGH);
delay(aInput);
digitalWrite(ledPin, LOW);
delay(aInput);
printInteger(aInput);
printByte(10);
}
```



It might look a little complex, but this light sensor project is very easy to implement and can be used in all kinds of applications.

You should be getting used to the syntax by now, and it's not difficult to understand what's happening. We take an analogue reading from the light sensor, and use this as a delay when flashing the onboard LED. The brighter the light falling on the sensor, the shorter the LED flashing delay. As we explained last month, analogue values range from 0–1023, which means that the flashing delay can potentially range between over a second, to an almost instantaneous flicker. But you'll find that most sensors need direct sunlight to shorten the delay to anything below 150 milliseconds (the units used by the 'delay' command), and artificial lighting make the differences harder to see. What we need is some way of seeing the value read from the light sensor so that we can fine-tune our program to deal with smaller changes. And that's exactly what the **beginSerial(9600)**, **printInteger(aInput)** and **printByte(10)** lines do. They open a serial connection to your computer, and begin sending back the value read from the light sensor. To see the value, you just need to open the Serial Monitor in the Arduino IDE on your desktop. You should see each value on a new line (the result of the **printByte** command), and you'll be able to follow the value read from the sensor as you vary the amount of light. Under bright office conditions, our sensor hovered at around 800 and dropped to 960 when we covered the sensor with a finger. It's worth noting that light sensors rarely have a linear response, so you can't expect twice the amount of light to halve the resistance.

Now that we understand the output from the sensor, we can begin to put the sensor to some use. We're going to use an array of

» **Last month** We annoyed the whole family with a simple piezo drum machine.

light meter

LEDs as a bar graph, with the number of lit LEDs representing the amount of light falling on the sensor. You can use up to 13 separate LEDs, as many as there are digital inputs on the Arduino, but we're going to use just four to illustrate the principle. Each LED needs to have its long pin connected to one of the digital inputs, via a 1k resistor in most instances (this is dependent on your LEDs). The shorter leg is connected to ground. We used a different terminal strip for each LED, with a bus connection attached to GND, and a direct wire to the digital input on the Arduino.

Step 2: Coding

That's the only extra wiring we need. But the program source code needs a little more work. Start with the top section of code, adding the following 'define' statement, and alter the **ledPin** variable:

```
#define MAX_LED 4
int ledPin[MAX_LED]={12, 11,10,9};
```

Instead of manually initialising and handling each LED connection to the Arduino, we've created a simple array that holds the output pin for each connection (**ledPin**). Not only does this take up less space on the page, it also makes it easier to skip through the array. This approach is also easily extensible. If you want to add or remove LEDs from the Arduino, you only need to change the **MAX_LED** value and remove the pin assignments from the array. But before we can light them up, we first need to initialise each pin we're going to use in the 'setup' function by replacing the **pinMode(ledPin, OUTPUT)** line with the following:

```
  for (int i=0; i<MAX_LED; i++){
    pinMode(ledPin[i], OUTPUT);
  }
```

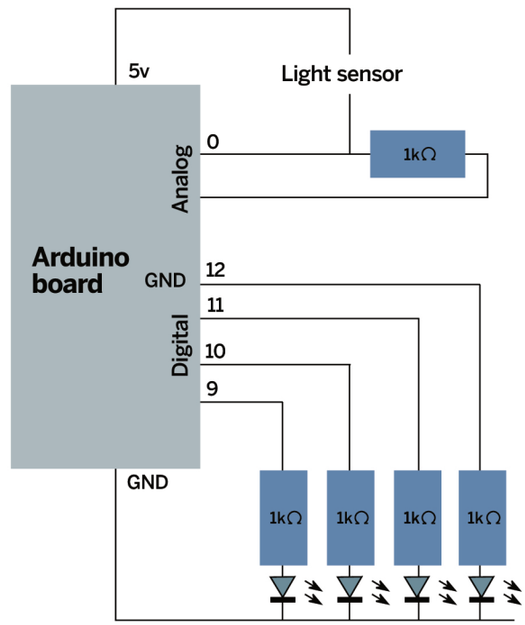
This simple 'for' loop shows you how easy it is to configure each LED in an array, and we're going to use the technique twice more in a new function called **barGraph**. It's this function's job to illuminate a number of consecutive LEDs, with the number dependent on an input value passed to the function. For example, if this number is 3, the first three LEDs in our array will be lit. We'll use this function to illustrate the brightness that the sensor detects:

```
void barGraph(int count) {
  for (int i=0; i<MAX_LED; i++){
    digitalWrite(ledPin[i], LOW);
  }
  for (int i=0; i<count; i++){
    digitalWrite(ledPin[i], HIGH);
  }
}
```

All this is doing is first turning off all LEDs before turning on each LED in turn, up to the value of the 'count' variable. Finally, the only program logic left to add are the commands responsible for calling the **barGraph** function with different values. We use a series of 'if' statements to peel off different brightness thresholds. The following values worked for us, but you may need to use the Serial Console in the Arduino IDE to find values that are more suitable for your setup. If the value read from the light sensor is less than 840, we light all four LEDs. This is the brightest setting, and represents the ambient light in an office. If you're lucky enough to be outside on a summer's day, a more suitable value might be 150. Each further division, for 3, 2, 1 and 0 LEDs is an arbitrary step above the start value. If you're using more than four LEDs, you'll need to add the corresponding steps to the 'if' statements.

```
  aInput = analogRead(analogInput);
  if (aInput < 840)
    barGraph(4);
  else if (aInput < 900)
    barGraph(3);
  else if (aInput < 940)
    barGraph(2);
  else if (aInput < 980)
    barGraph(1);
  else
    barGraph(0);
  delay (10);
```

When you compile and send this program to your Arduino, you will see that the bank of LEDs respond directly to the amount of light falling on the sensor. Darkness will turn the LEDs off, while a direct light source will illuminate them all. And that's all there is to it. From this stage, there's a lot you can add that will make this project more useful. You could use it in a home automation setup, for example, turning devices on or off when it gets dark. The best place to start is the Arduino Sketchbook, the online repository for all things Arduino, as well as the helpful forums full of people just like you. Both can be found from the main Arduino site: **www.arduino.cc**. Let us know if you come up with anything cool. LXF



Quick tip

If you're trying to install or upgrade the Arduino IDE and it starts to generate strange and lengthy compilation errors, make sure you've also got the *avr-libc* package installed.

Kernel: Modules

It's the indispensable bit of software at the centre of your machine, but what does the kernel actually do? **Dr Chris Brown** cracks it open and takes a peek inside.

Our expert

Dr Chris Brown
A Unix user for over 25 years, his own company provides Linux training, content and consultancy. He also specialises in computer-based classroom training delivery systems.

My trusty Oxford Dictionary defines a kernel as "a softer, usually edible part of a nut" but offers as a second meaning: "The central or most important part of something." (Incidentally, it's this first definition that gives rise to the contrasting name 'shell', meaning, in Linux-speak, a command interpreter.) In case you're a bit hazy on what a kernel actually does, we'll start with a bit of theory.

The kernel is a piece of software that, roughly speaking, provides a layer between the hardware and the application programs running on a computer. In a strict, computer-science sense, the term 'Linux' refers only to the kernel – the bit that Linus Torvalds wrote in the early 90s. All the other pieces you find in a Linux distribution – the *Bash* shell, the KDE window manager, web browsers, the *X* server, *Tux Racer* and everything else – are just applications that happen to run on Linux and are emphatically not part of the operating system itself. To give some sense of scale, a fresh installation of RHEL5 occupies about 2.5GB of disk space (depending, obviously, on what you choose to include). Of this, the kernel, including all of its modules, occupies 47MB, or about 2%.

Inside the kernel

But what does the kernel actually do? The diagram on page 100 (Fig 1) shows the big picture. The kernel makes its services available to the application programs that run on it through a large collection of entry points, known technically as system calls. From a programmer's viewpoint, these look just like ordinary function calls, although in reality a system call involves a distinct switch in the operating mode of the processor from user space to kernel space. Together, the repertoire of system calls provides a 'Linux virtual machine', which can be thought of as an abstraction of the underlying hardware.

One of the more obvious abstractions provided by the kernel is the filesystem. By way of example, here's a short program (written in C) that opens a file and copies its contents to standard output:

```
#include <fcntl.h>
int main()
{
   int fd, count; char buf[1000];
   fd=open("mydata", O_RDONLY);
   count = read(fd, buf, 1000);
   write(1, buf, count);
   close(fd);
}
```

Here, you see examples of four system calls – **open**, **read**, **write** and **close**. Don't fret over the details of the syntax; that's not important right now. The point is this: through these system calls (and a few others) the Linux kernel provides the illusion of a 'file' – a sequence of bytes of data that has a name – and protects you from the underlying details of tracks and sectors and heads and free block lists that you'd have to get into if you wanted to talk to the hardware directly. That's what we mean by an abstraction.

As you'll see from Fig 1, the kernel has to work hard to maintain this same abstraction when the filesystem itself might be stored in any of several formats, on local storage devices such as hard disks, CDs or USB memory sticks – or might even be on a remote system and accessed through a network protocol such as NFS or CIFS. There may even be an additional device mapper layer to support logical volumes or RAID. The virtual filesystem layer within the kernel enables it to present these underlying forms of storage as a collection of files within a single hierarchical filesystem.

Behind the scenes

The filesystem is one of the more obvious abstractions provided by the kernel. Some features are not so directly visible. For example, the kernel is responsible for process scheduling. At any one time, there are likely to be several processes (programs) waiting to run. The kernel's scheduler allocates CPU time to each one, so that if you look over a longer timescale (a few seconds) you have the illusion that the computer is running several programs at the same time. Here's another little C program:

```
#include <stdlib.h>
main()
{
  if (fork()) {
    write(1, "Parent\n", 7);
    wait(0);
    exit(0);
```

» **Last month** We showed you how to use the Linux Terminal Server Project.

in a nutshell

```
  }
  else {
    write(1, "Child\n", 6);
    exit(0);
  }
}
```

This program creates a new process; the original process (the parent) and the new process (the child) each write a message to standard output, then terminate. Again, don't stress about the syntax. Just notice that the system calls **fork()**, **exit()** and **wait()** perform process creation, termination and synchronisation respectively. These are elegantly simple calls that hide the underlying compexities of process management and scheduling.

An even less visible function of the kernel, even to programmers, is memory management. Each process runs under the illusion that it has an address space (a valid range of memory addresses) to call its own. In reality, it's sharing the physical memory of the computer with many other processes, and if the system is running low on memory, some of its address space may even be parked out on the disk in the swap area. Another aspect of memory management is that it prevents one process from accessing the address space of another – a necessary precaution to preserve the integrity of a multi-processing operating system.

The kernel also implements networking protocols such as IP, TCP and UDP that provide machine-to-machine and process-to-process communication over a network. Again, this is all about illusions. TCP provides the illusion of a permanent connection between two processes – like a piece of copper wire connecting two telephones – but in reality no permanent connection exists. Note that specific application protocols such as FTP, DNS or HTTP are implemented by user-level programs and aren't part of the kernel.

Linux (like Unix before it) has a good reputation for security. It's the kernel that tracks the user ID and group ID of each running process and uses these to provide a yes/no decision each time an application attempts to access a resource (such as opening a file for writing), by checking the access permissions on the file. This access control model is ultimately responsible for the security of Linux systems as a whole.

Finally (apologies to the many programmers who've written pieces of the kernel that do things that aren't on this brief list), the kernel provides a large collection of modules that know how to handle the low-level details of talking to hardware devices – how to read a sector from a disk, how to retrieve a packet from a network interface card and so on. These are sometimes called device drivers.

The modular kernel

Now we have some idea of what the kernel does, let's look briefly at its physical organisation. Early versions of the Linux kernel were monolithic – that is, all the bits and pieces were statically linked into one (rather large) executable file. In contrast, modern Linux kernels are modular: a lot of the functionality is contained in modules that are loaded into the kernel dynamically. This keeps the core of the kernel small and makes it possible to load or replace modules in a running kernel without rebooting.

The core of the kernel is loaded into memory at boot time from a file in the **/boot** directory called something like **vmlinuz-KERNELVERSION**, where **KERNELVERSION** is, of course, the kernel version. (To find out what kernel version you have, run the command **uname -r**.) The kernel's modules are under the directory **/lib/modules/KERNELVERSION**. All of these pieces were copied into place when the kernel was installed.

Managing modules

For the most part, Linux manages its modules without your help, but there are commands to examine and manage the modules manually, should the need arise. For example, to find out which modules are currently loaded into the kernel, use **lsmod**. Here's a sample of the output:

```
# lsmod
pcspkr          4224  0
hci_usb        18204  2
psmouse         38920  0
bluetooth      55908  7 rfcomm,l2cap,hci_usb
yenta_socket    27532  5
rsrc_nonstatic  14080  1 yenta_socket
isofs          36284  0
```

The fields in this output are the module's name, its size, its usage count and a list of the modules that are dependent on it. The usage count is important to prevent unloading a module that's currently active. Linux will only enable a module to be removed if its usage count is zero.

You can manually load and unload modules using **modprobe**. (There are two lower-level commands called **insmod** and **rmmod** that do the job, but **modprobe** is easier to use because it automatically resolves module dependencies.) For example, the output of **lsmod** on our machine shows a loaded module called **isofs**, which has a usage count of zero and no dependent modules. (**isofs** is the module that supports the ISO filesystem format used on CDs.) The kernel is happy to let us unload the module, like this:

```
# modprobe -r isofs
```

»

Get the kernel source code

You don't have to be a super-geek to get the kernel source code. You can simply install the kernel source package provided by your distribution as you'd install any other package.

For example, on my Ubuntu machine I ran the command:

```
# apt-get install linux-source
```

Alternatively, you could try going to **www.kernel.org** and downloading the kernel source tarball (it will be called something like **linux-2.6.24.2.tar.bz2**) into **/tmp**. Unpack it in **/usr/src**:

```
# cd /usr/src
# tar xjf /tmp/linux-2.6.24.2.tar.bz2
```

In either case, you'll end up with the kernel source in a subdirectory of **/usr/src** that will be named after the kernel version; typically it will be called something like **/usr/src/linux-source-2.6.24**.

» Now **isofs** doesn't show up on the output of **lsmod** and, for what it's worth, the kernel is using 36,284 bytes less memory. If you put in a CD and let it automount, the kernel will automatically reload the **isofs** module and its usage count will rise to 1. If you try to remove the module now, you won't succeed because it's in use:

```
# modprobe -r isofs
FATAL: Module isofs is in use.
```

Whereas **lsmod** just lists the modules that are currently loaded, **modprobe -l** will list all the available modules. The output essentially shows all the modules living under **/lib/modules/KERNELVERSION**; be prepared for a long list!

In reality, it would be unusual to load a module manually with **modprobe**, but if you did you could pass parameters to the module via the **modprobe** command line. Here's an example:

```
# modprobe usbcore blinkenlights=1
```

No, we haven't just invented **blinkenlights** – it's a real parameter for the **usbcore** module.

The tricky bit is knowing what parameters a module accepts. You could phone a friend or even ask the audience, but a better approach is to use the **modinfo** command, which lists a variety of information about the module.

Here's an example for the module **snd-hda-intel**. We've pruned the output somewhat in the interests of brevity:

```
# modinfo snd-hda-intel
filename:       /lib/modules/2.6.20-16-generic/kernel/sound/pci/hda/snd-hda-intel.ko
description:    Intel HDA driver
license:        GPL
srcversion:     A3552B2DF3A932D88FFC00C
alias:          pci:v000010DEd0000055Dsv*sd*bc*sc*i*
alias:          pci:v000010DEd0000055Csv*sd*bc*sc*i*
depends:        snd-pcm,snd-page-alloc,snd-hda-codec,snd
vermagic:       2.6.20-16-generic SMP mod_unload 586
parm:           index:Index value for Intel HD audio interface. (int)
parm:           id:ID string for Intel HD audio interface. (charp)
parm:           model:Use the given board model. (charp)
parm:           position_fix:Fix DMA pointer (0 = auto, 1 = none, 2 = POSBUF, 3 = FIFO size). (int)
parm:           probe_mask:Bitmask to probe codecs (default = -1). (int)
parm:           single_cmd:Use single command to communicate with codecs (for debugging only). (bool)
parm:           enable_msi:Enable Message Signaled Interrupt (MSI) (int)
parm:           enable:bool
```

The lines of interest to us here are those starting with **parm:** – these show the parameters accepted by that module. These descriptions are terse, to say the least. To go hunting for further documentation, install the kernel source code. Then you'll find a directory called something like **/usr/src/KERNELVERSION/Documentation**. There's some interesting stuff under here; for example, the file **/usr/src/KERNELVERSION/Documentation/sound/alsa/ALSA-Configuration.txt** describes the parameters recognised by many of the *ALSA* sound modules. The file **/usr/src/KERNELVERSION/Documentation/kernel-parameters.txt** is also helpful.

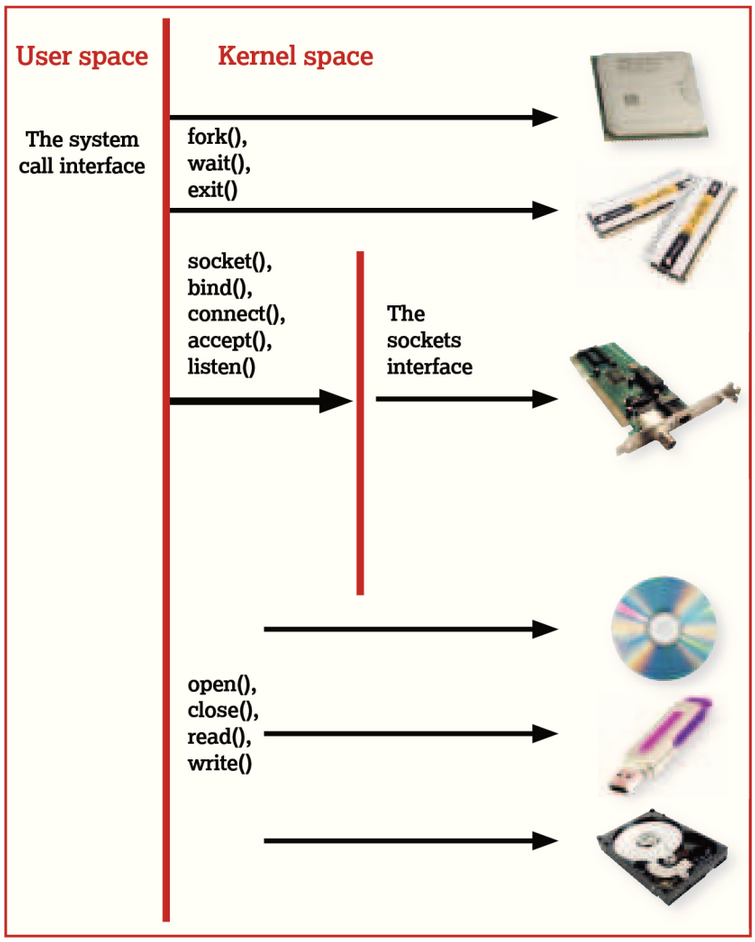
An example of needing to pass parameters to a module came up quite recently on one of the Ubuntu forums (see **https://help.ubuntu.com/community/HdaIntelSoundHowto**). Essentially the point was that the **snd-hda-intel** module needed a little help in driving the sound hardware correctly and would sometimes hang when it loaded at boot time. Part of the fix was to supply the option **probe_mask=1** to the module. So, if you were loading the module manually, you'd type:

```
# modprobe snd-hda-intel probe_mask=1
```

More likely, you'd place a line in the file **/etc/modprobe.conf** like this:

```
options snd-hda-intel probe_mask=1
```

This tells **modprobe** to include the **probe_mask=1** option every time it loads the **snd-hda-intel** module. Some recent Linux distrubutions split this information up into multiple files under **/etc/modprobe.d** rather than putting it all in **modprobe.conf**.



› (Fig 1) The kernel uses system calls such as 'read' and 'write' to provide an abstraction of your hardware.

The /proc filesystem

The Linux kernel also exposes a great deal of information via the **/proc** filesystem. To make sense of **/proc** we need to broaden our concept of what a file is. Instead of thinking of a file as permanent information stored on a hard drive or a CD or a memory stick, we need to think of it as any information that can be accessed via traditional system calls such as the open/read/write/close calls we saw earlier, and which can, therefore, be accessed by ordinary programs such as *cat* or *less*. The 'files' under **/proc** are entirely a figment of the kernel's imagination and provide a view into many of the kernel's internal data structures.

In fact, many Linux reporting tools present nicely formatted versions of the information they find in the files under **/proc**. As an example, a listing of **/proc/modules** will show you a list of currently loaded modules that's strangely reminiscent of the output from **lsmod**. In a similar vein, the contents of **/proc/meminfo** provides more detail about the current status of the virtual memory system than you could shake a stick at, whereas tools such as *vmstat* and *top* provide some of this information in a (marginally) more accessible format. As another example, **/proc/net/arp** shows the current contents of the system's ARP cache; from the command line, **arp -a** shows the same information.

Is performance tuning worth it?

My father's first car was a Wolseley 1500, registration 49 RNU, though how I come to remember such an obscure and ancient detail is beyond me. Anyway, he loved tinkering, and spent hours making minute adjustments to things like the ignition timing and mixture setting. Occasionally he'd remove the spark plugs and adjust the gaps. While the plugs were out, he'd pour redex into the cylinders as part of some mysterious process of colonic irrigation. After this, the car would produce satisfyingly robust clouds of black smoke out the back as the redex burned off. The trouble was that he had no objective way of measuring what improvements his efforts had made. He kept meticulous records of petrol purchases and mileages and calculated fuel consumption to several decimal places, and there was a specific hill he'd drive up in third gear to "see how it went", but it wasn't what you'd call scientific.

Many Linux system administrators find themselves in a similar position. They know there are all kinds of parameters they can tweak that might improve performance, but have little idea of what most of them do and no good way to measure performance. So, my advice is: unless you know what you're doing, and/or have a way to measure performance, leave these settings alone!

Of particular interest are the 'files' under **/proc/sys**. As an example, the setting under **/proc/sys/net/ipv4/ip_forward** says whether the kernel will forward IP datagrams – that is, whether it will function as a gateway. Right now, the kernel is telling us that this is turned off:

```
# cat /proc/sys/net/ipv4/ip_forward
0
```

It gets much more interesting when you discover that you can write to these files, too. Continuing our example:

```
# echo 1 > /proc/sys/net/ipv4/ip_forward
```

will turn on IP forwarding in the running kernel.

Instead of using *cat* and *echo* to examine and modify the settings under **/proc/sys**, you can also use the **sysctl** command:

```
# sysctl net.ipv4.ip_forward
net.ipv4.ip_forward = 0
```

is equivalent to:

```
# cat /proc/sys/net/ipv4/ip_forward
0
```

and

```
# sysctl -w net.ipv4.ip_forward=1
net.ipv4.ip_forward = 1
```

is the same as

```
# echo 1 > /proc/sys/net/ipv4/ip_forward
```

Notice that the pathnames you supply to **sysctl** use a full stop (**.**) to separate the components instead of the usual forward slash (**/**), and that the paths are all relative to **/proc/sys**.

Be aware that settings you change in this way only affect the current running kernel – they will not survive a reboot. To make settings permanent, put them into the file **/etc/sysctl.conf**. At boot time, *sysctl* will automatically re-establish any settings it finds in this file.

A line in **/etc/sysctl.conf** might look like this:

```
net.ipv4.ip_forward=1
```

Performance tuning

The writeable parameters under **/proc/sys** have spawned a whole sub-culture of Linux performance tuning. Personally, I think this is overrated (see above), but here are a few examples should you wish to try it.

The installation instructions for *Oracle 10g* (**www.oracle.com/technology/obe/obe10gdb/install/linuxpreinst/linuxpreinst.htm**) ask you to set a number of parameters, including:

```
kernel.shmmax=2147483648
```

which sets the maximum shared memory segment size to 2GB. (Shared memory is an inter-process communication mechanism that enables a memory segment to be visible within the address space of multiple processes.)

The IBM 'Redpaper' on Linux performance and tuning guidelines (**www.redbooks.ibm.com/abstracts/redp4285.html**) makes many suggestions for adjusting parameters under **/proc/sys**, including this:

```
vm.swappiness=100
```

This parameter, apparently, controls how aggressively memory pages are swapped to disk.

Some parameters may be adjusted to improve security. Bob Cromwell's website (**http://cromwell-intl.com/security/security-stack-hardening.html**) has some good examples, including this:

```
net.ipv4.icmp_echo_ignore_broadcasts=1
```

which tells the kernel not to respond to broadcast ICMP ping requests, making your network less vulnerable to a type of denial-of-service attack known as a Smurf attack.

Here's another example:

```
net.ipv4.conf.all.rp_filter=1
```

tells the kernel to enforce sanity checking, also called ingress filtering or egress filtering. The point is to drop a packet if the source and destination IP addresses in the IP header don't make sense when considered in light of the physical interface on which it arrived.

So, is there any documentation on all these parameters? Well, the command

```
# sysctl -a
```

will show you all their names and current values. It's a long list, but it gives you no clue what any of them actually do. So what else is there? As it turns out, O'Reilly has published a book, written by Olivier Daudel and called */proc et /sys*. Oui, mes amis, it's in French, and we're not aware of an English translation. Another useful reference is the *Red Hat Enterprise Linux Reference Guide*, which devotes an entire chapter to the subject. You can download it from **www.redhat.com/docs/manuals/enterprise**. The definitive book about the Linux kernel is *Understanding the Linux Kernel* by Bovet and Cesati (O'Reilly), but be aware that this is mainly about kernel internals and is probably more of interest to wannabe kernel developers and computer science students rather than system administrators.

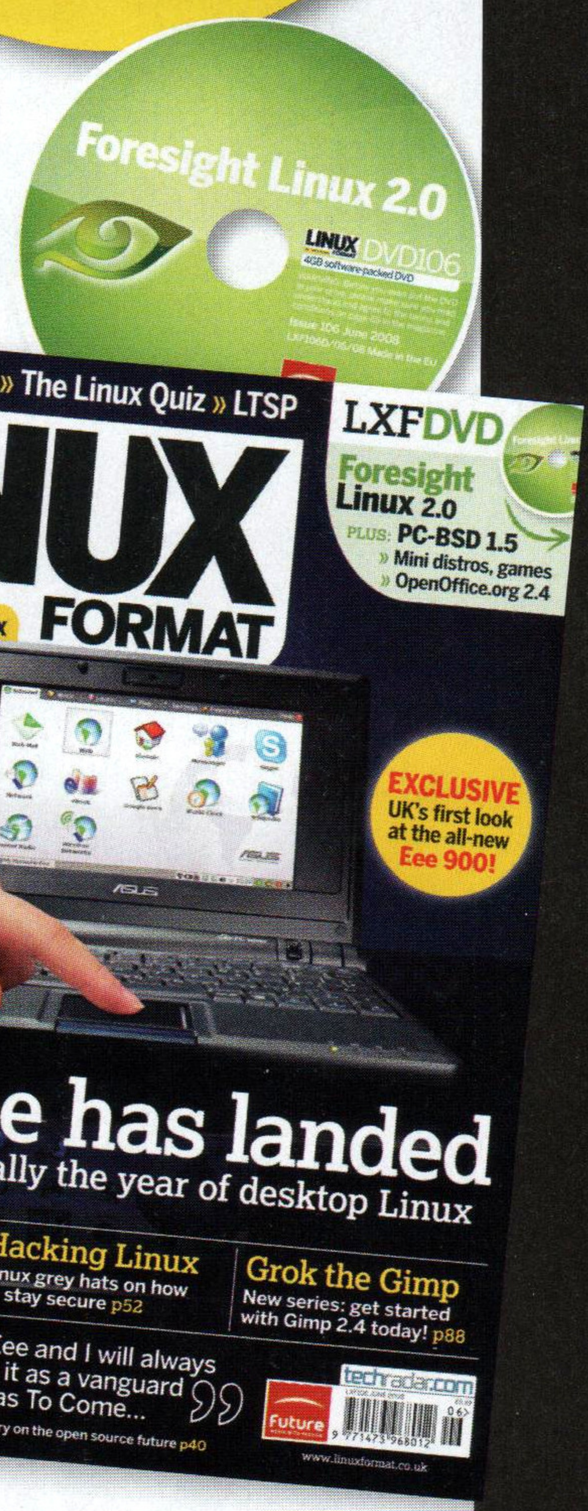
It's also possible to configure and build your own kernel. For this, you might try Neil Bothwick's excellent tutorial in **LXF89**, or Greg Kroah-Hartman's *Linux Kernel in a Nutshell*, an O'Reilly title that makes a delightful but presumably unintended play on words. But, of course, you have to be nuts to make a kernel. LXF

» **Next month** Make your news come to life by blending RSS with Festival!

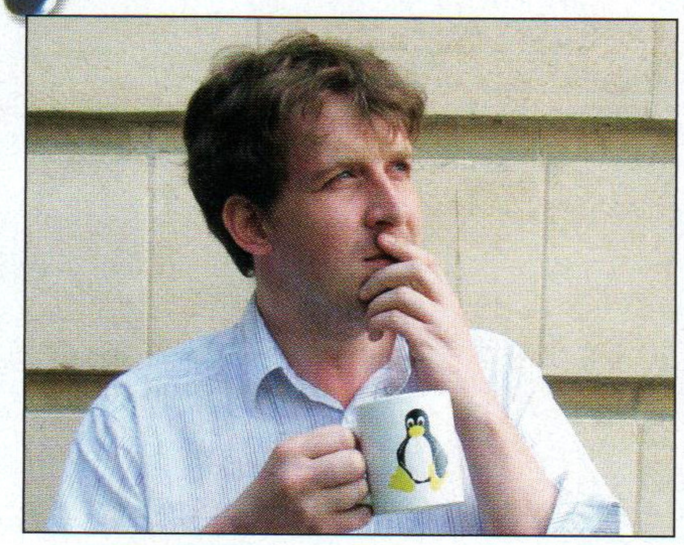
Subscribe today
And get 30% OFF!

PLUS Get a free Linux Format mug!

Pay only £14.65 By Direct debit every 3 months!

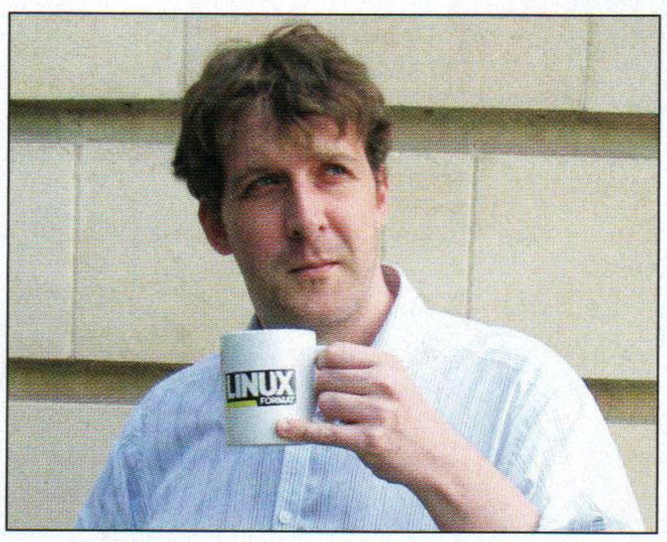


Step by step: Using your LXF mug



1 The thirsty man ›

Are you lacking in vim and vigour? Why not have a cup of tea/coffee/other tasty brew in your penguin-emblazoned receptacle?



2 The sated man

After supping your favourite beverage from the **LXF** mug your thirst will be slaked and you'll be ready for anything. Now go get 'em!

www.myfavouritemagazines.co.uk/lxd/P052

Please use the full web address shown to enjoy this special offer

```
/*
   TOP SECRET Microsoft(c)  Project: Longhorn(TM) SP1
   Estimated release date: 2008
*/

#include "win95.h"
#include "win98.h"
#include "leopard.h"

char chew_up_some_ram[10000000];

void main() {
 while (!CRASHED) {
  if (first_time_install) {
   make_10_gigabyte_swapfile();
   do_nothing_loop();
   search_and_destroy(FIREFOX | OPENOFFICEORG | ANYTHING_GOOGLE);
   hang_system();
  }

  if (still_not_crashed) {
   basically_run_windows_xp();
   do_nothing_loop();
  }
 }

 if (!DX10GPU()) {
  set_graphics(aero, very_slow);
  set_mouse(reaction, sometimes);
 }

 // printf("Welcome to Windows 2000");
 // printf("Welcome to Windows XP");
 printf("Welcome to Windows Vista");

 while (something) {
  sleep(10);
  get_user_input();
  sleep(10);
  act_on_user_input();
  sleep(10);
  flicker_led_promisingly(hard_disk);
 }

 create_general_protection_fault();
}
```

Answers

Got a question about open source? Whatever your level, email it to **lxf.answers@futurenet.co.uk** for a solution.

This month we answer questions on:

1. Hardware monitoring
2. Installing software
3. UUIDs
4. Fishy screensavers
5. Wireless USB serial modems
6. IPv6
7. Ethernet security configuration
8. Using an iPod with Linux

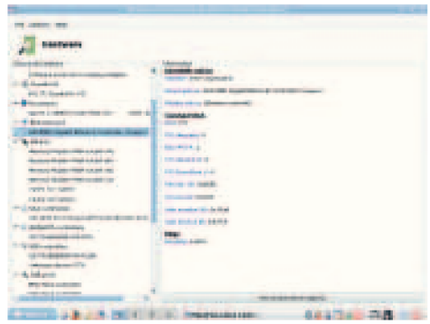
1 Inside information

Q I work in a mostly Windows environment but am constantly striving to move to Linux; one thing I find quite frustrating is good visibility of what devices I have running and their status with regards to device drivers. I hesitate to say but Microsoft does a good job with its Device Manager. Is there something in Linux that provides the same sort of visibility?
David Hill

A The situation is rather different with Linux, because most drivers are included with the kernel, so there's not the same need to compare what is installed and running with what is available from various websites. As long as you keep your package manager up to date, it will inform you of any updates. There are various programs that will report on the status of your hardware, some generic and some specific to a distro. One of my favourites is *lshw* (**http://ezix.org/project/wiki/HardwareLiSter**), which is generally used in a console and gives a detailed listing of everything in the machine, from motherboard and CPU to USB devices. The default output is plain text, but it can also generate HTML for viewing in a web browser or open a window where you can click on items to see more information. It has a number of options to limit the information given, such as restricting it to certain types of device or removing sensitive information like serial numbers from the output.

A similar program is *HardInfo* (**http://hardinfo.berlios.de**) which displays plenty of information about your hardware and software in a GUI. This displays information in a tree view so you can zoom in on the specific details you need. There is a section showing the loaded kernel modules, so you can see which drivers your hardware is using. You may need to run these programs as root, or with *sudo*, to be able to read everything from your system.

The main desktop environments have their own programs: the *Gnome Device Manager* and KDE's *KInfoCentre*, which provide similar information. Various distros also have their own variants of these programs: Ubuntu's *Device Manager* (which is probably closest to the Windows program, although it is a while since I used that), SUSE's *Yast* and Mandriva's Control Centre all provide hardware information. The SUSE and Mandriva offerings are integrated into their all-encompassing system administration programs, so they also have the option of configuring the hardware where appropriate. **NB**



Mandriva's *Control Centre* is one of many programs that will report on your hardware.

2 Moving pains

Q I installed Ubuntu from the DVD with LXF104 and all went well. I was impressed with the user interface and was able to get networking, Nvidia support and printing up and running quite easily. Unfortunately that's as far as I got.

I decided to install some software, starting with *FlightGear*. I unzipped the files and then tried to find the install instructions, or as I would do in Windows, the install Exe file. I eventually found some instructions, obviously written by a programmer, telling me how to compile the program. I followed the command line instructions to the letter, but only succeeded in generating errors.

Not to give up too soon I followed the instructions for installing *Toribash* on page 70. The first part worked, but when I typed toribash_ubuntu7 at the command prompt it gave me an error saying "bash: toribash_ubuntu7; command not found".

I would love to be able to dump, or at least sideline Windows, but if it is this difficult to install a program on Linux, then I fear it will be some years yet. The descriptions in your magazine of the various programs available are fantastic, but what use are they if a normal person cannot install them? Given the enormous energy, intelligence and dedication the program writers have put in, could one of them not write a simple install.exe for Linux to allow those who wish to put their toes in the Linux water, the mechanism to do so?
Alastair Gilmore

Our experts

Whatever your question, we can find an expert to answer it. From installation and modem woes to network administrations, we will get the answer for you – just fire off a letter or email and it will all be taken care of.

Neil Bothwick
Having run a small ISP and produced coverdiscs for *Linux Format*, Neil describes himself as a Linux jack of all trades.

Mike Saunders
Mike was one of the original contributors to LXF prototype *Linux Answers*. His specialisms are programming, window managers, *init* scripts and the SNES.

Paul Hudson
Paul is the in-house programming whizz, but is also ready and willing to tackle all your web- and database-related problems.

Graham Morrison
When not reviewing mountains of software and tinkering with *MythTV*, Graham is on call to answer any hardware and virtualisation issues!

WHERE TO SEND YOUR QUESTIONS:

Write to *Linux Format*, Future Publishing, 30 Monmouth Street, Bath BA1 2BW or send an email to lxf.answers@futurenet.co.uk.

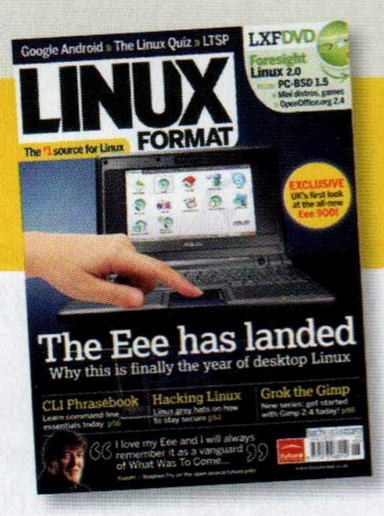
LINUX FORMAT Back issues

Missed one?

Every month *Linux Format* brings you the best tutorials, the essential reviews and the latest news. But if you've missed out on a must-read feature or a vital program from our expertly compiled DVDs, order your back issue NOW! And remember, you need never miss an issue of your favourite Linux magazine if you subscribe to *Linux Format* (see pages 78 and 102 for details).

Issue 106
June 2008

Product code:
LXFDB0106



In the magazine

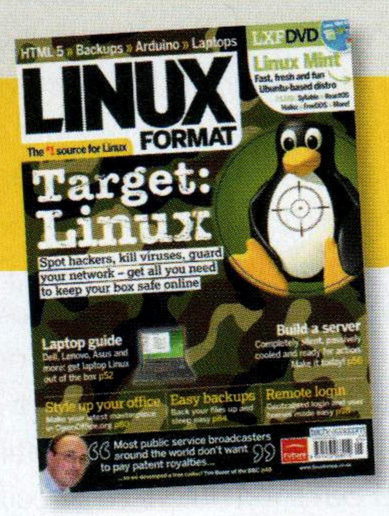
We never saw it coming, but 2008 is shaping up to be the year of Linux on the laptop – find out how and why in our Eee PC cover feature. Plus we've news from how Linux is helping sysadmins go green, reviews of GOS, *UndoDB 2.2* and the Nokia 810, and the awesome test of geekiness that is the Linux Quiz.

LXFDVD highlights

Foresight Linux 2.0 must be one of the easiest ways to get started with Linux – and it installs in just 10 minutes! There's also PC-BSD for some old-school Unixery, and the usual games and apps.

Issue 105
May 2008

Product code:
LXFDB0105



In the magazine

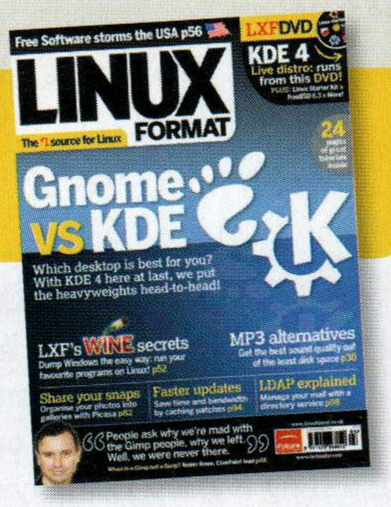
Think you're safe from hackers because you run Linux? Think again – the bad guys are out there, and they want your box. We build a DIY media server with cheap and salvaged parts, guide you through the pitfalls of Linux on laptops, examine some of the tactics that MS is using against open source, and pay a visit to the Beeb.

LXFDVD highlights

Cool, fresh and based on Ubuntu – Linux Mint 4.0 is our star distro. Plus there's a feast of alternative operating systems, Insert security distro for sysadmins and the usual LXF blend of top apps.

Issue 104
April 2008

Product code:
LXFDB0104



In the magazine

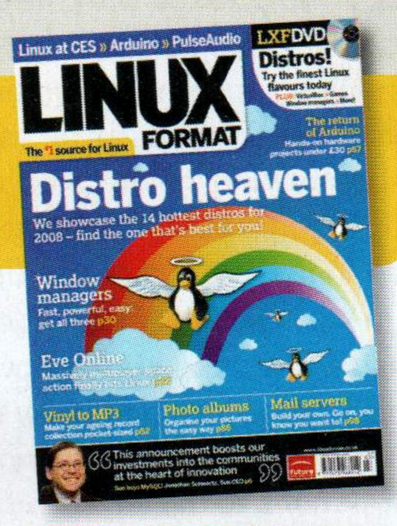
After the wait for KDE 4, we bring you the ultimate desktop showdown – KDE vs Gnome. Plus: we report on how Linux is making waves aross the pond, more open-source hacking in our Arduino project, *Wine* hacks, What on Earth is RPM 5, Robin Rowe on *CinePaint* and news of a refreshing Ubuntu-flavoured drink.

LXFDVD highlights

The desktop you've been waiting for – KDE 4 on a Live DVD. Plus a special newbies' Ubuntu packed with intructions for installing, setting up and using Linux.

Issue 103
March 2008

Product code:
LXFDB0103



In the magazine

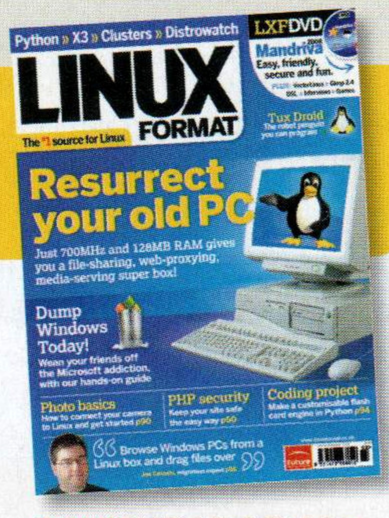
Hardware hacking revisited with the return of the Arduino, the happy world of Ubuntu and 14 of the hottest distros in the world right now. Plus we see how Linux got on at the Consumer Electronics Show in Las Vegas, write a *Pong*-alike ball game, build a mail server, rip MP3s from dusty old vinyl and get stuck into music editing.

LXFDVD highlights

A veritable smorgasbord of software in our double-sided, 8GB distro megapack: Ubuntu 7.10, OpenSUSE 10.3, Mandriva One 2008, Debian 4.0r2, Mepis 7, PCLinuxOS 2007, Fedora 8...

Issue 102
February 2008

Product code:
LXFDB0102



In the magazine

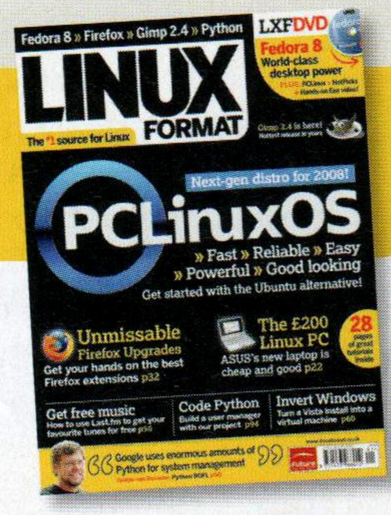
Breathe new life into ancient hardware, wean yourself off Windows and get started with *Ardour*. PHP security, What on Earth is Classmate PC, the start of a new photography tutorial series, virtual servers, programming with Python, *X³: Reunion*, *Autopano Pro 1.4*, and the really, scary/cute Tux Droid USB robot

LXFDVD highlights

Free Mandriva 2008, VectorLinux, Damn Small Linux 4.0, *Flash Player 9*, *Dream Chess* OpenGL chess sim, 30 PDFs of interviews with the great and good, plus over 150 Linux questions answered.

Issue 101
January 2008

Product code:
LXFDB0101



In the magazine

Turn your Windows install into a VM, Last.fm and Linux, make your own config tools with Python, command line SQL. High availability clusters, migrate from Windows, exporting from *Outlook*, Trinity Digital Audio Workstation, Gnome Online Desktop, *Ardour*, *CodecBuddy* & Fedora, Asus EeePC mini-laptop and more!

LXFDVD highlights

PCLinuxOS 2007, Fedora 8, *Aqualung* music player, *Celtx* cloning tool, *QTractor* audio sequencer, *Vulcan* 3D chess, *Miro* internet TV player, *Kvkbd* virtual keyboard, *Songbird* media player.

To order, visit www.myfavouritemagazines.co.uk

Select Linux Format from the 'Select your favourite magazine' drop-down box on the right.

Or call the back issues hotline on 0870 837 4773 or +44 1858 438795 for overseas orders

Quote the issue code shown above and have your credit or debit card details ready

One of the biggest challenges when trying a new operating system is "unlearning" the ways you currently do things. Linux is not Windows and many things are done differently, and software installation is probably the most extreme example of this. There are three main ways to install a package in Linux: compiling from source, downloading a package from the program's website (or a DVD) and installing through the distro's package manager. The middle option is the closest to the Windows approach, although it does not use executable files – instead the file is a package containing all you need, and is loaded with a package manager. If there is a Deb file available, install it with

```
sudo dpkg --install someprogram.deb
```

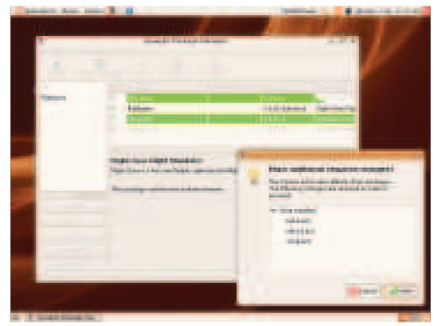
This works, but it suffers some of the same limitations as the Windows method. You have to revisit the website to see if updates are available, there may be conflicts with other installed software and you have no idea about the integrity of the package you have just downloaded. All of these are avoided by using the distro's package manager and repositories. A repository is a collection of packages that have been built and tested for your distro, and verified to be free of any known security vulnerabilities. Packages are digitally signed, and verified by the package manager, to ensure you get only "clean" software. Not only is this the best way to install software, it is also the most convenient and includes almost everything you can want. Simply start *Synaptic* (in the case of Ubuntu), press the Search button to find what you are looking for, pick what you want to install and click on Apply. The package manger takes care of sourcing the packages it needs, including any dependencies, packages required by your package, downloading and installing them. It will also keep you informed up any updates as they become available.

Some of the graphical package managers, such as SUSE's *Yast*, will also install from a package you downloaded or found on a DVD, but *Synaptic* does not currently do this, hence the need for the *dpkg* command given before.

If you want to compile programs from source, you will need the **build-essentials** package – install this from *Synaptic*. The *Toribash* error arose because Linux will only look for commands in a list of specific directories, which as a security measure excludes the current directory. To run a command located in the current directory, prefix its name with **./**, as in **./toribash_ubuntu7**. MS

3 UUID confusion

Q I run Ubuntu 7.10 and thought I would repartition my hard disk, and keep /home on a new separate partition, as described in Jack Knight's article in LXF100, but without the encryption. However a number of issues arose and before I do the deed I would appreciate some advice if possible.



Installing software for Linux is best done with your distro's package manager – some have well over ten thousand packages available.

It is not clear from the article, nor from any of the books I have read, exactly how to ensure that the operating system knows where the new /home partition is. The instructions in the article apply to the situation where the encryption process has been completed.

I thought that the answer might lie with fstab so I had a look at fstab (I've attached a copy) but found that the existing Linux partitions have a UUID entry, which is frankly incomprehensible. The *fstab* entries for the two Linux partitions on the drive also seem to be commented out.

```
# /dev/sda3
UUID=ff773431-fb57-48b4-bb55-01da6902c372 /
ext3 defaults,errors=remount-ro 0 1
```

If I run *GParted* from the System/Administration menu I cannot change the sizes of the Linux partitions – I think this is because they are mounted and it is more dangerous to edit mounted partitions – however I have downloaded a Live CD version of *GParted* that boots the PC and allows any of the partitions to be edited.

John Paton

A You are on the right lines with trying to add the new **/home** to **/etc/fstab**. The entry would normally be something like

```
/dev/sda5 / ext3 defaults,errors=remount-ro 0 1
```

but, as you have discovered, Ubuntu uses UUIDs instead of partition numbers. The commented lines before them are simply to show you which partitions they applied to at the time of installation. A UUID is a unique identifier applied to a filesystem when it is created, one that doesn't change for the life of the filesystem. If you were to shrink **/dev/sda2** and add another partition between it and the current **sda3**, that would change to **sda4** and your **fstab** would no longer work, but the UUID stays the same, so the Ubuntu-style **fstab** would still work.

You have a number of choices here when you add your new home filesystem. You can do it the way you know and use the traditional **/dev/xxx** method, knowing that you will need to edit **fstab** if you move partitions. Or you could do it the Ubuntu way by using the *vol_id* command to get the UUID of your new partition.

See page 108 for Rackspace's star letter.

Answers

```
$ sudo vol_id /dev/sda5
ID_FS_USAGE=filesystem
ID_FS_TYPE=reiserfs
ID_FS_VERSION=3.6
ID_FS_UUID=e242a0ee-f07e-45f2-a104-c8603ccfbe04
ID_FS_UUID_ENC=e242a0ee-f07e-45f2-a104-c8603ccfbe04
ID_FS_LABEL=
ID_FS_LABEL_ENC=
ID_FS_LABEL_SAFE=
```

Here you can see the UUID of the filesystem and you can paste it into **fstab**. There is a third option, and *vol_id*'s output gives a clue – the filesystem label, which is the method preferred by Red Hat/Fedora. This has the advantages of UUID in terms of not changing when partitions are added, but is also more readable. All you need to do is give your partitions labels with

```
e2label /dev/sda5 HOME
```

then edit **/etc/fstab** to contain

```
LABEL=HOME / ext3 defaults,errors=remount-ro 0 1
```

You can change the label of an existing ext3 filesystem with *e2label* without disturbing the contents, so you can label your root partition and amend **fstab**. If you are using a filesystem other than ext3, they all have their own labelling tools, you can even label your swap partition with "**mkswap -L ...**".

You are correct about *GParted* not working on mounted partitions, but you don't need a separate Live CD; you can boot from the Ubuntu install disk and run it from there. **NB**

4 Desktop fishiness

Q I am running Gnome on Mint 4.0, which is based on Ubuntu 7.10. Is it possible to use *Sherman's Aquarium* as a screensaver? I've installed it and it runs as an applet on the Gnome panel and I can manually start a larger version from the command line, but it doesn't appear as a screensaver in the screensaver list. It looks as though the list is generated with some XML config files, but I don't want to start fiddling without an idea of what I'm doing.

liegerm, from the forums

A *Sherman's Aquarium* works with *XScreenSaver* but not *Gnome-screensaver*. *XScreenSaver* is not installed by default with Mint Linux, so the first step is to install it. Installing *Sherman's Aquarium* in the usual way (via the *Synaptic* package manager), installs the program but does not add it to the list of screensavers used by *XScreensaver*, possibly because it is considered a hack.

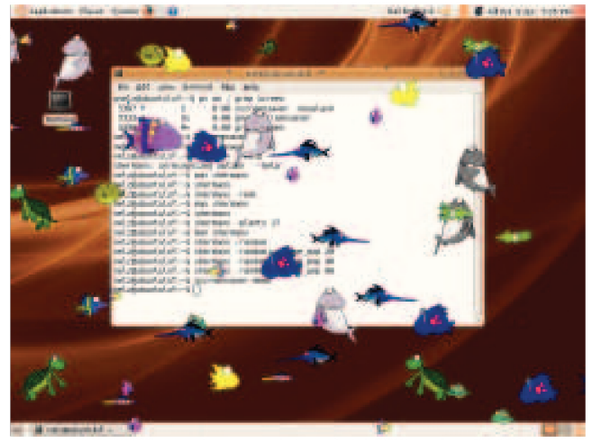
To add it to the list, you need to edit the file **.xscreensaver** in your home directory. If this file does not exist, run **xscreensaver-demo** this will create the file with the default settings. Now edit the file and find the line that says **programs:**. Add a line after this that contains

```
"Sherman's aquarium" shermans -root \n\
```

Then run **xscreensaver-demo** to configure the screensaver. Finally, you need to make sure *XScreenSaver* runs when you start a session, and disable *Gnome-screensaver*. Go to System > Preferences > Sessions and press Add, type in a suitable name and description and set the command to

```
xscreensaver -nosplash
```

Disable the *Gnome-screensaver*, log out and in again and you should see a very fishy desktop when the screen blanks. **GM**



***Sherman's Aquarium* is a cute screensaver, but you have to use it with *XScreenSaver* – it won't work with the default Gnome setup.**

5 Broadband wireless modem

Q I bought the *Linux Format* February 2008 edition with Mandriva 2008 [LXF102]. I have used Microsoft for about 25 years and I must confess Linux is vastly different and it really takes some coming to grips with. I still consider myself on "L" plates. I am using a Maxon Broadband Wireless Modem Model BP3-EXT to access the internet using Windows XP on a desktop PC. My ISP, Bigpond in Australia, has informed me that it does not support Linux operating systems. Can I connect to the internet?

Peter Barnes

A The answer to your question is "yes" but I suspect you also want to know how. The modem you have is a USB serial modem. Despite it using wireless to connect to the internet, it appears to the computer as a normal dial-up modem. Getting it to work in Linux involves two fairly simple steps. The first is to load up the driver, and make sure it is loaded every time you boot. The other step is setting up the dialler software to connect. The modem needs the USB serial driver, which is included with all distros, but it needs to be configured to work with your modem and for that you need its vendor and product ID codes. You can find these by running *lsusb* in a root terminal or by examining the output from *dmesg* (which prints out kernel messages). Open a root terminal, plug in the modem then run

```
dmesg | tail -n 20
```

to see the last twenty lines of kernel messages and look for something like this

```
usb 2-4.4: new full speed USB device using ehci_cd and address 8
usb 2-4.4: new device found, idVendor=16d8, idProduct=6280
```

Now, using the values from *dmesg* (which may not be the same as given here), load the driver:

```
modprobe -v usbserial vendor=0x16d8 product=0x6280
```

Star Question Winner!

This month's winner is Changeling. Your new Coolpix camera is on its way!

Card readers

Q I am thinking of buying a Canon S5IS camera that uses SD memory cards. However I am told that I need a "card reader". My computer has lots of free 2.0 USB slots, but I don't know what reader is compatible with Linux. (I'm running OpenSUSE 10.3.)

Changeling, from the forums

A A far more difficult question to answer would be "which card readers do not work with Linux?".

Some people have reported problems with the 99-in-one type card readers. This is usually caused by them running a home-built kernel stripped of all the superfluous options. These devices often need the **SCSI_MULTI_LUN** option enabled, which will be the case with any default distro kernel, because each card port on the reader is seen as a separate device. If you only want to use it with one type of card, the single-format readers that look like a USB pen drive are more convenient; you just plug the card into the slot and the reader directly into the USB port.

You may not need a card reader; *Gphoto2* is able to download pictures from most cameras via their USB cable. Your camera is not in their list of supported devices, but if it is a newish camera, this should change soon. If you use KDE, type **camera:/** in the *Konqueror* location bar to see a list of connected cameras and the photos on them. Having said that, I find a card reader faster and more convenient, especially as it means I can put a card in my laptop and carry on shooting with another. **NB**

Software

OS Market Share

Windows

MacOS Linux Others

The Office of Fair Trading's (08457 224499) job is to enforce competition,

Do Your Job OFT!

*IDC figures for 2003, 96%,2.3%,1,7%,<0.1% to scale.

www.rebootmovement.org.uk

Movement REBOOT
The Anti-Wintel Campaign

Computers and Services

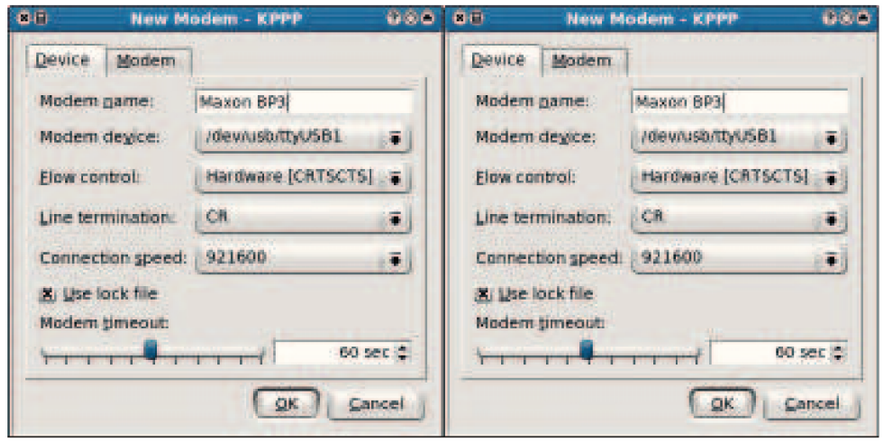
» Running *dmesg* again should show

```
usbcore: registered new interface driver usbserial
drivers/usb/serial/usb-serial.c: USB Serial support registered for generic
usbserial_generic 2-4.4:1.0: generic converter detected
usb 2-4.4: generic converter now attached to ttyUSB0
usbserial_generic 2-4.4:1.1: generic converter detected
usb 2-4.4: generic converter now attached to ttyUSB1
usbserial_generic 2-4.4:1.2: generic converter detected
usb 2-4.4: generic converter now attached to ttyUSB2
```

which means you have successfully loaded the drivers and enabled the modem. You can make this happen on boot by adding **usbserial** to **/etc/modules.preload** and the following line to **/etc/modprobe.conf**:

```
options usbserial vendor=0x16d8 product=0x6280
```

Now switch from root back to your normal user. As you can see from the *dmesg* output, the modem appears as three devices. The one you want is **/dev/ttyUSB1**, so fire up *Kppp* and set up a new connection using **/dev/ttyUSB1** as the modem device, "***99#**" as the number to dial and the login details given by your ISP. When setting up the modem, set Flow Control to Hardware and turn off "Wait for dial tone before dialling". **NB**



› **The Maxon wireless broadband modem is set up as a traditional dialup modem in *Kppp*.**

6 Internet or internot?

Q I have tried several distros including Fedora, Mandriva and SUSE, and I always have the same two problems. The first problem is that *Firefox* rarely manages to connect to the internet, giving a 'timed out' message, which I also get if I try to update the system, while *Konqueror* has no problems.

The second problem is that after anything from a few minutes to an hour or two, the screen will freeze and not respond to the mouse pointer, which is still able to move. I am using an Nvidia graphics card but had tried unsuccessfully several times to install the proprietary driver for it. I tried Ubuntu Feisty from the LXF94 DVD after reading that it had a simple method of installing the Nvidia driver. This worked very easily and now my screen no longer freezes. I have also found that *Firefox* works on Feisty too, and so do updates. Then I decided to try Ubuntu Gutsy on another partition when it appeared on LXF100's DVD. I found that the Nvidia driver would not install on Gutsy as the internet connection could not be made, even after trying a different download server, and updates would not work either. My problem with *Firefox* also returned, although *Konqueror* still worked with no problems.

Is this a problem with my hardware or settings, and why does Ubuntu Feisty work?
David Sykes

A Your internet connection problem is almost certainly caused by your browser trying to talk to your modem or router using IPv6. If the connection does not work with IPv6, the system is supposed to fall back to using the older IPv4. However, some routers do not do this and get confused when dealing with a client that talks IPv6 and an upstream connection (your ISP) that does not.

Frequently asked questions...

Rsync and Unison

Synchronise multiple directories without losing files.

» What is this *Rsync* program?
It is a way of synchronising the contents of two directories, ensuring one is an identical copy of the other.

» Can't you use *cp* for that?
Yes, but *cp* copies everything. *Rsync* only copies files that are different. With large files that have changed, it only copies the changed parts.

» Sounds good. How do I use it?

```
rsync --archive --delete /path/to/source/  /path/to/dest/
```

will ensure that the second directory contains an exact copy of the first. The **--delete** option removes files not present on the first, and **--archive** causes all file permissions and time stamps to be copied too. The trailing slashes are important with *Rsync*, as they indicate that you want to synchronise the contents of the directories. If you omit them, you could end up copying one directory into another.

» What if I want to synchronise with a directory on another computer? I have a local copy of a website here and don't want to copy everything when only a few files change.
Provided you have SSH access to your web server, you can use

```
rsync --archive --delete /my/local/site/ server:/path/to/site/
```

When one or both of the paths contains a computer's hostname, *Rsync* uses a remote shell program for the transfers. This is SSH by default, but you can change it to something else – even RSH if you want everyone to be able to read your files in transit!

» What if I want to synchronise directories on my Linux and Windows computers?
Rsync is available for Windows, but don't use the **--archive** option if you are using a FAT partition, because FAT doesn't support file permissions. See the *Rsync* man page for a list of the options.

» This all sounds a bit one-way.
You need something designed more for that task, such as *Unison* (**www.cis.upenn.edu/~bcpierce/unison**). *Unison* uses *Rsync* and SSH for the transfers, so you keep all of the above benefits, but it's designed for two-way synchronisation. If you've changed some files on one computer and some on another, it will ensure that each computer has the most up-to-date version.

» That sounds clever. What if I edit the same file on both computers? I bet it's not so smart then.
It can't read your mind and know which version you want to keep, but it can tell that both copies have been changed and ask you which one to use. *Unison* keeps track of all changes, so it knows if a file has been changed on both computers since it was last run.

There are three ways to deal with this: fix the router, disable IPv6 at system level or disable it in the browser. It would be worth checking the router manufacturer's website to see if there is a firmware upgrade available. The problem may completely disappear after doing this.

If not, you can tell your computer not to use IPv6 so *Firefox*, or any other program, doesn't even try to communicate with the router in this way. You disable IPv6 by adding or editing these two lines in your modules configuration file. This is **/etc/modprobe.d/aliases** in Ubuntu, but can be **/etc/modprobe.conf** or **/etc/modules.d/aliases** in other distros.

```
alias net-pf-10 off
alias ipv6 off
```

These should replace any existing lines that refer to IPv6. The third option, which should only be used when neither of the others is possible, is to disable IPv6 in *Firefox*, which won't help with anything else. Type **about:config** into *Firefox*'s location bar, then IPv6 in the Filter box. If **network.dns.disableIPv6** is set to false, right-click on it and pick toggle from the menu to change it to True.

Most distros now have the Nvidia drivers in their repositories, but installing them is fairly simple if you download the package from **www.nvidia.com**. Press Ctrl+Alt+F1 to switch from the desktop to a console, log in as root (or run **sudo -i** from Ubuntu) then execute these commands

```
init 3
sh NVIDIA-Linux-XXXX-pkg1.run
nvidia-config
init 5
```

Debian and Ubuntu users should replace the first and last commands, which turn off and on the *X* server, with

```
/etc/init.d/dm stop
/etc/init.d/dm start
```

The Nvidia installer bails out if *X* is running, hence the need to switch to a console and disable *X*. Part of the installation process may involve compiling a module for your kernel, if this fails, make sure the **build-essentials** package is installed. **Nvidia-config** modifies your *X* configuration file to use the new driver. **NB**

7 HomePlug and play

Q I have a Devolo dLAN HomePlug 85Mbps Ethernet Starter Kit. Devolo provides a software utility to enable encryption between each device, but I don't know how to install the provided software. Scott

A This is a source package: you need to compile it, but first there are a couple of requirements you should install from *Synaptic*. *Dlanconfig* depends on *libpcap*, which is installed by default in Ubuntu, but to compile against it you also need the **libpcap-dev** package. You also need to the **build-essentials** package, which includes the compiler and other tools needed to build software from source. Once these are installed through *Synaptic*, open a terminal and change the the directory containing the file you downloaded from **www.devolo.com**, then run

```
tar xf dLAN-linux-package-XX.tar.gz
cd dLAN-linux-package-XX
./configure
make cfgtool
sudo make install-cfgtool
```

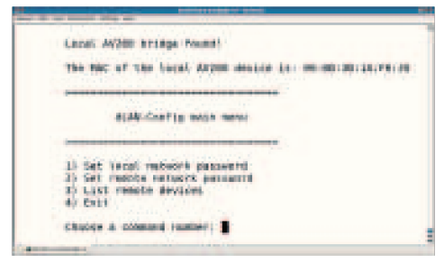
The first two lines unpack the archive and change to the directory containing its file. The next two build the config tool from source and the last one installs the files to your system. If you decide to remove the software at any time, repeat the process, but make the last command

```
sudo make uninstall
```

Now you can start the program with

```
sudo dlanconfig eth0
```

and change your passwords. You will need the devices' security codes, which cannot be read when they are plugged in, so make a note of these first. Run *dlanconfig* and take the option to change the remote password, which also changes the one for the local device. If you change the local device first, you will not be able to connect to the remote one to change that because the passwords no longer match.



› Install the Devolo dLAN software to change encryption settings on your HomePlug network.

If you have the USB version of the dLAN devices, you need to change the last two lines of the build process to

```
make usbdriver
sudo make install-usbdriver
```

to install that or simply

```
make
make install
```

to install both. Building the USB driver requires the kernel sources, so use *Synaptic* to install the linux-source package first. **NB** »

Help us to help you

In order to give the most complete answers to your questions, we need to know as much as possible. If you get an error message, please tell us the exact message and precisely what you did to invoke it. If you have a hardware problem, let us know about the hardware. If Linux is already running, you can use the excellent *Hardinfo* program (**http://hardinfo.berlios.de**) that gives a full report on your hardware and system. The report is an HTML file that you can attach to your mail.

If you are unwilling, or unable, to install *Hardinfo*, run the following commands in a root terminal and attach the **system.txt** file to your email. This will still be a great help in diagnosing your problem.

```
uname -a >system.txt
lspci >>system.txt
lspci -vv >>system.txt
```

A quick reference to...

Commands

When using the command line, there are often occasions when you need to run several commands in sequence (this can also happen when you're using a GUI, but the solution is nowhere near as simple). The classic example of this is the standard method of compiling software from source, which requires you to run ./configure (possibly with some arguments) followed by make, then make install.

Each of these steps can take anywhere from a few seconds to many hours, depending on the complexity of the code and speed of your machine. Waiting for one to complete before running the next is inefficient, so you could do

```
./configure; make; make install
```

The semicolons cause the commands to be executed in sequence – as if you'd run each one individually.

Some of you may have already noticed a potential problem here. What happens if ./configure or make fails – will the subsequent commands try to execute anyway? The answer is yes, which would hide any error messages in the following output, and you may not even realise there was an error until you try to use the program.

A safer way to run these commands is

```
./configure && make && make install
```

&& is a logical operator. This command line actually means "if ./configure is true and make is true and make install is true". Fortunately for us, the shell determines if a command is true by running it to see if it gives any errors. If a command fails, there's no point in running the next one because the test has already failed, so joining commands with && runs them in sequence, but stops as soon as one of them returns an error, meaning we no longer need to babysit the shell.

The companion command to && is ||, which means 'or'. So in

```
command1 || command2
```

command2 only runs if command1 fails. This is less useful in the interactive shell, but is used often in shell scripts, as in

```
somecommand1 || echo "Something broke!"
```

The Big Question How can I synch my iPod using Linux?

8 Use an iPod with Linux

Q I've just bought an iPod nano and seem to be having some problems with it using Linux. Every time I try to put music on it, it goes wrong. *Banshee* and *Gtkpod* fill all the space up on my iPod without putting anything on it and it doesn't mount in *Amarok*. This is very frustrating, as I have to put all my songs on my iPod using the family computer, which runs Windows. My computer is running Ubuntu 7.10.
Josh Ansell

A There are several options for transferring music between a Linux system and an iPod. *Banshee* and *Amarok* both include the functions within a media player, and *Gtkpod* is a dedicated program for the job. There are ways to integrate it with other software, such as the fusepod Fuse filesystem to mount an iPod and the *Kpod* KIO slave for KDE. Although it's possible to mount the iPod as a USB mass storage device, simply copying files to the device does nothing but fill it up. You have to use a suitable tool to manage the music on Apple's devices.

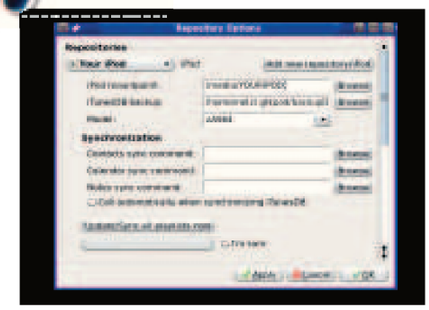
The simplest is probably *Gtkpod*. Start the program and go to **Edit > Edit Repository/iPod Options**. Set the mount point to wherever your iPod is automounted and select the correct model number. You can find the model number on the device, on the first line of the file **iPod_Control/Device/SysInfo**. Now you can add your music collection to *Gtkpod* and copy tracks to the iPod by dragging them from the local window on to the iPod's entry in the left-hand pane. You must then click Save Changes to write the files to the iPod and, importantly, update the iPod's database.

The procedure is similar with *Amarok*. First, tell it about your device in the main configuration windows, then go to the devices tab in the main window and click on the iPod icon above it to set the correct model. Now, you can drag tracks or entire playlists to your iPod. They will appear in the Transfer pane at the bottom-left of the window, until you press the Transfer button. This step is necessary to copy the tracks and update the database. It's likely to be the lack of database update that's causing your problems, and this can be caused by setting the wrong iPod model.

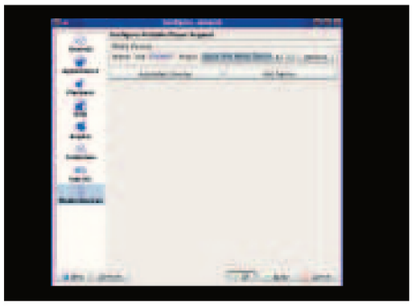
Or you may prefer *Banshee*, which can also copy to iPods. This is the easiest of the lot to set up. Just tell it where your music files live, plug in the iPod and drag tracks from the library. To copy the files and update the iPod's database, right-click on the iPod's name in the left-hand pane and select Synchronise iPod and Save Manual Changes to copy over the files you dropped on the device. Alternatively, use the Synchronise Library option to copy your collection to the iPod.

To access the device directly, there's a Fuse filesystem for iPods available from **http://fusepod.sourceforge.net** and a KDE KIO slave from **http://sourceforge.net/projects/kpod**. With the latter, you type **ipod:/** in *Konqueror*'s location bar to access the iPod directly, and copy files by dropping them on the Transfer folder. Then go into the Utilities folder and run Synchronise to write the changes. **NB** LXF

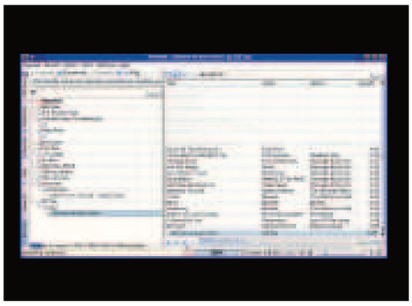
Step by step: Tools for managing your iPod



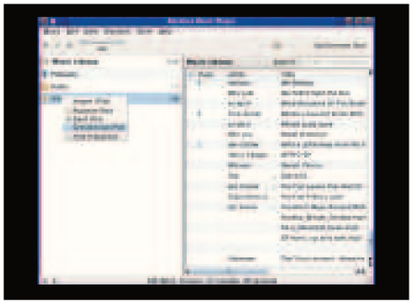
1 Set up Gtkpod
Gtkpod is easy to set up, but you may have to look in the iPod's filesystem to find the correct model code.



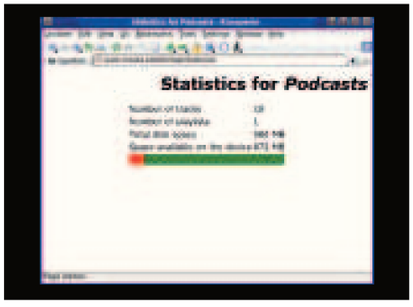
2 Set up Amarok
Amarok will probably auto-detect your iPod: check the details and confirm. Set the model from the Devices tab of the main window.



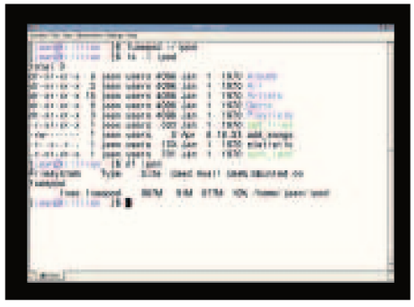
3 Using Amarok
Once the iPod is detected, you can play music from it or copy tracks to it, but make sure you synchronise after copying.



4 Banshee
Banshee's interface is straightforward and simple to use. Drag and drop to copy, and right-click on the iPod to synchronise.



5 iPod as a device in KDE
The kpod KIO slave gives direct read and write access to the iPod's music, including various utility programs.



6 An iPod in a console
The fusepod filesystem enables you to mount and work with the iPod's database in a shell – not the interface Apple intended, but it works.

LINUX FORMAT

The #1 source for Linux

Future Publishing Ltd, 30 Monmouth Street, Bath BA1 2BW **Tel** 01225 442244
Email linuxformat@futurenet.co.uk

ABC **25,353** January–December 2007
A member of the Audited Bureau of Circulations.

EDITORIAL
Editor Paul Hudson
paul.hudson@futurenet.co.uk
Reviews editor Graham Morrison
graham.morrison@futurenet.co.uk
New media editor Mike Saunders
mike.saunders@futurenet.co.uk
Art editor Efrain Hernandez-Mendoza
efrain.hernandez-mendoza @futurenet.co.uk
Operations editor Andrew Gregory
agregory@futurenet.co.uk
Editorial contributors Ladislav Bodnar, Neil Bothwick, John Brandon, Chris Brown, David Cartwright, Andy Channelle, Michael J Hammel, Richard Hillesley, Andy Hudson, Dmitry Kirsanov, Michael Meeks, David Neary, Richard Smedley, Nick Veitch
Art assistance Ziggi Baker, Neil Freestone, Claire Gerrey, Phil Haycraft
Production assistance Sarah Edwardes
Illustrations Shane Collinge, Chris Winn, iStock Photo

MANAGERIAL & MARKETING
Marketing product manager Jennifer Wagner
Acquisitions product manager James Greenwood
Publishing director Stuart Anderton
UK chief operating officer Simon Wear
UK chief executive Robert Price

ADVERTISING SALES
Advertising director *sean.igoe@futurenet.co.uk*
Advertising managers *steve.griggs@futurenet.co.uk*
andrew.tilbury@futurenet.co.uk
Agency account manager
paula.stephenson@futurenet.co.uk
Senior sales executives
matt.bailey@futurenet.co.uk, iain.bryan.@futurenet.co.uk, michael.pyatt@futurenet.co.uk, james.lesteve@futurenet.co.uk
Classified sales executive *grant.ward@futurenet.co.uk*

PRODUCTION AND DISTRIBUTION
Production coordinator Craig Broadbridge
Trade marketing executive Kate Robson
Distributed by Seymour Distribution Ltd, 2 East Poultry Avenue, London EC1A 9PT **Tel** 020 7429 4000
Overseas distribution by Future Publishing Ltd
Tel +44 (0)1225 442244

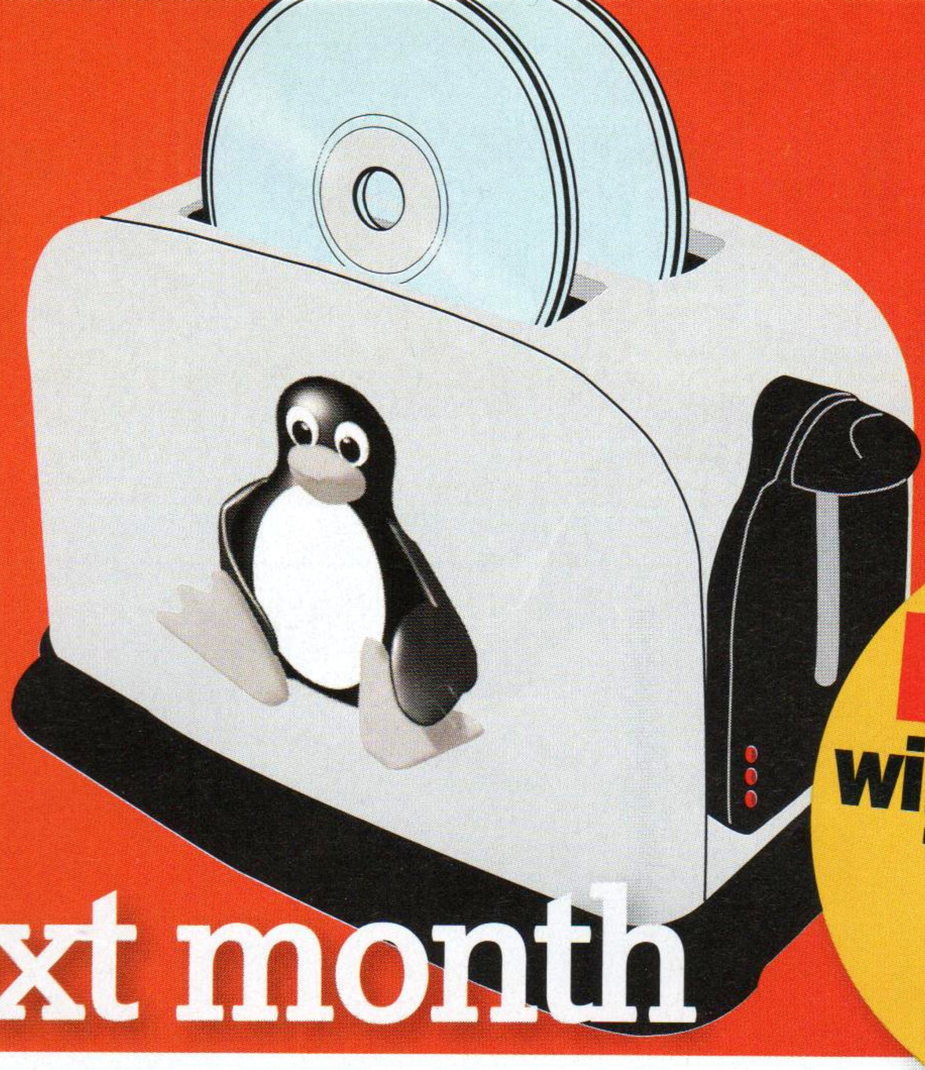
LICENSING
Head of international licensing Tim Hudson
thudson@futurenet.co.uk **Tel** +44 (0)1225 788253

SUBSCRIPTIONS & BACK ISSUES
UK readers' order line 0870 837 4722
General UK enquiries 0870 837 4773
Overseas readers +44 (0) 1858 438795
Online enquiries www.myfavouritemagazines.co.uk
Email *linuxformatdvd@subscription.co.uk*

Printed in the UK by Midway Clark (Holt) and William Gibbons

Future Publishing Ltd is part of Future plc.
Future produces carefully targeted special-interest magazines for people who share a passion. We aim to satisfy that passion by creating titles offering value for money, reliable information, smart buying advice and which are a pleasure to read. Today we publish more than 150 magazines in the UK, US, France and Italy. Over 100 international editions of our magazines are also published in 30 other countries across the world. Future plc is a public company quoted on the London Stock Exchange (symbol: FUTR).
Non-executive chairman Roger Parry **Chief executive** Stevie Spring
Group finance director John Bowman **Tel** +44 (0)1225 442244 **www.futureplc.com**

ATLANTA • BATH • LONDON • NEW YORK • PARIS • SAN DIEGO • SAN FRANCISCO



LXF108 will be on sale Thursday 26 June

Next month

Get Linux Everywhere

Ready for installfest insanity? Lock up your gadgets while it's still safe, because we show you how to get Linux on them all!

NEW: Ruby on Rails
Learn coding the Web 2.0 way with our all-new tutorial series.

Make ALSA work
Everyone uses sound, but few people make it work flawlessly. Here's your chance to be one of the successful crowd!

Talking heads
Get spoken news with Festival, RSS and hardcore hackage!

Contents of future issues are subject to change – freedom of choice is of course an advantage of Linux!

LINUX FORMAT
The #1 source for Linux

July 2008

DVD107

Open index.html for full DVD listings

DVD

This month's DVD highlights

DISTROS
Ubuntu 8.04
Mandriva One 2008 Spring

DESKTOP
Basket 1.0.2
Compiz 0.6.2
Gimp 2.4.5
Inkscape 0.46
KnowIt 0.10
MythTV 0.21
NoteCase 1.8.4
Pondus 0.4.0
Project Hamster 0.1.7.5
Tomboy 0.10.0
TuxCards 1.2
Zim 0.23

DEVELOPMENT
Arduino IDE 0011
Cream 0.41
Geany 0.14
Pygame 1.8.0

GAMES
Atomic Tanks 2.9
House of Mirrors 0.4
Stormbaan 2.1.4

INDISPENSIBLE
Alexandria 0.6.3
Bluefish 1.0.7
CeeMedia 0.5.2.1
Cuyo 2.1.1
Dia 0.96.1
Hugin 0.7 beta 4
Jokosher 0.9
Octave 3.0.1
Qtpfsgui 1.8.12
Salasaga 0.8.0a1
Stellarium 0.9.1
TeeWorlds 0.4.2
TuxGuitar 1.0-rc3
Warzone 2100 2.0.10

INTERNET
Claws Mail 3.4.0
Firefox 3.0 beta 5
Gnubiff 2.2.10
KuFTP 1.5.0
SkipStone 1.0.1

SECURITY
Evilvte 0.4.2
Rxlogd 0.7
Schily 2008-04-22

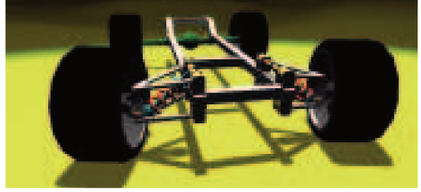
Mandriva One 2008 Spring

Linux for everyone: a complete, easy to use distribution

» User-friendly installer » Office and web software » Powerful admin tools

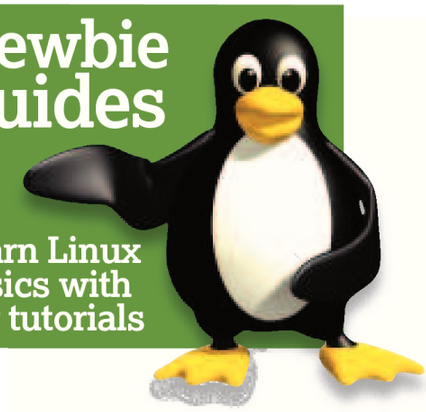
GAMES

✓Atomic Tanks ✓House of Mirrors
✓Stormbaan ✓Warzone 2100



Newbie guides

Learn Linux basics with our tutorials



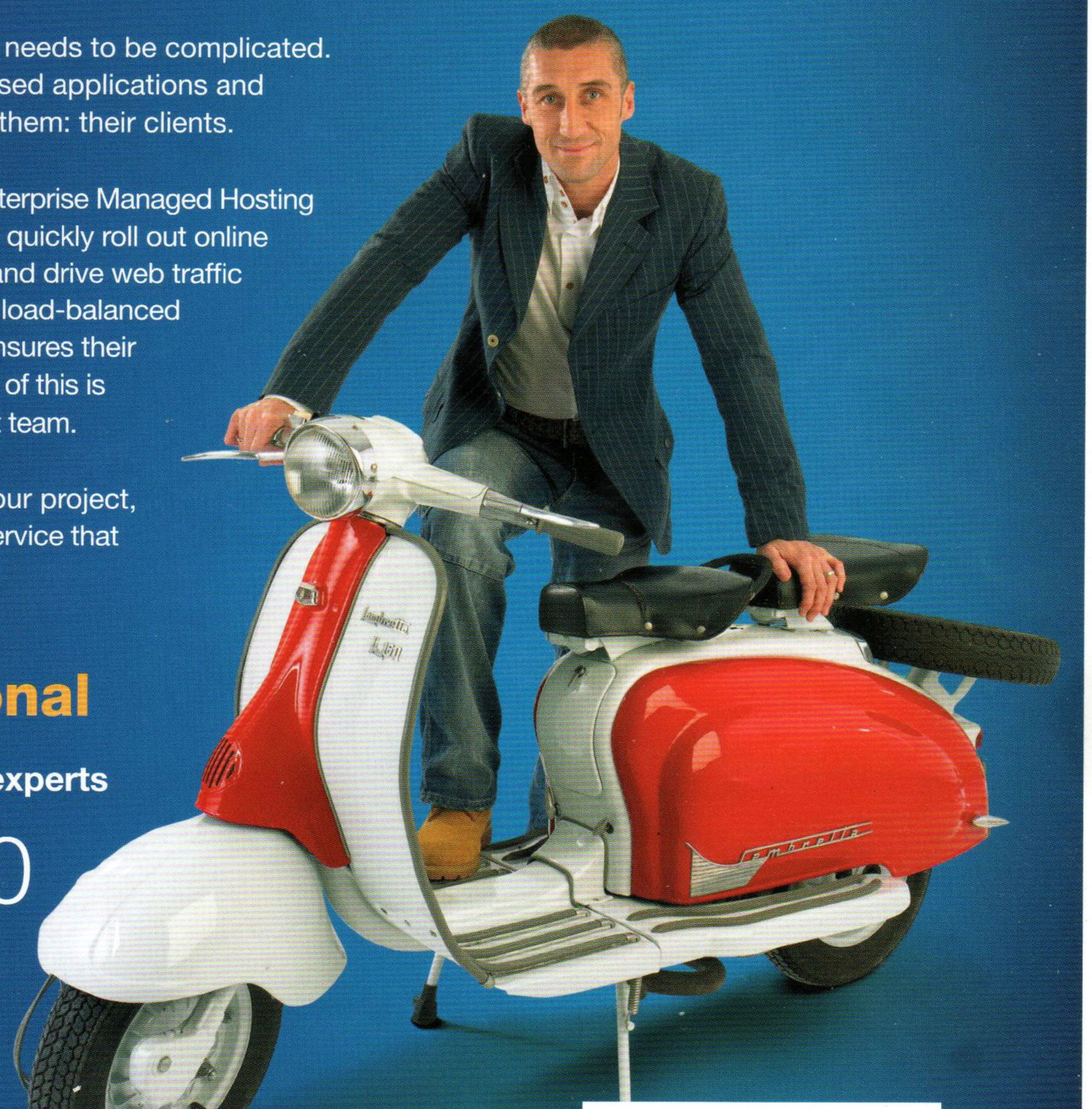
HOSTWAY

“We need highly specific hardware and flexible support to fulfil our own clients’ needs”

Hostway don’t believe Enterprise level hosting needs to be complicated. We enable companies that depend on web-based applications and services to focus on what’s most important to them: their clients.

Design UK, a leading digital agency, chose an Enterprise Managed Hosting solution from Hostway which allows its clients to quickly roll out online marketing campaigns, optimise their websites, and drive web traffic with minumum hassle and optimum reliability. A load-balanced VMware platform, allied to Pillar SAN storage, ensures their operation never fails them or their clients. And all of this is backed-up 24*7 by Hostway’s Enterprise support team.

Whatever the size, duration or complexity of your project, Hostway supply a highly scalable, responsive service that is truly focused on what you want to achieve.
If it’s important to you, it’s important to us!



Leigh Whitney
Design UK

Read how Hostway helped me at
www.hostway.co.uk/itspersonal

at Hostway it’s personal

Call us today and talk to one of our experts

0808 180 1880

or visit us online at **www.hostway.co.uk**

WHO’S BEHIND YOUR WEBSITE?

Domain Registration • Email Hosting • Web Hosting • Ecommerce • VPS • Dedicated Servers • Enterprise Managed Hosting

Call us free on 0808 180 1880 • sales@hostway.co.uk • www.hostway.co.uk

Hostway are proud partners with:

redhat. Fedora CORE SWSOFT PLESK SWSOFT VIRTUOZZO intel inside pentium HEWLETT PACKARD CISCO SYSTEMS pillar DATA SYSTEMS vmware

HOSTWAY
THE HOSTING COMPANY

HOSTING

"It's an amazing feeling to know that Rackspace Fanatical Support® is always there for me and my clients"

Paul Hatcher
Web Director
Base One Group

You cannot see Fanatical Support, but it's always there supporting you and your website or online application day and night, week in, week out.

Rackspace manages your hosting so you don't have to.

Experience Fanatical Support, call us on **0800 634 0120** or visit us at **www.rackspace.co.uk/fanatical**

experience ***fanatical support®***

rackspace®

DVD ROM

LXF107D/07/08

Future
MEDIA WITH PASSION

ANY COMMENTS?

Send your thoughts and coverdisc suggestions to **mike.saunders@futurenet.co.uk** with "Disc Contents Suggestion" as the subject line of the email, or by post to:

Disc Editor, Linux Format, Future Publishing, 30 Monmouth Street, Bath BA1 2BW

● **Please read the DVD pages in the magazine before using this disc.**

recycle

Respect the Environment

Throwing away old or surplus discs?
If you would like your CDs and DVDs to be recycled rather than put into landfill, please post them to:
Polymer-Reprocessors,
Reeds Lane, Moreton, Wirral, CH46 1DW
Please respect the environment and dispose of waste plastic responsibly.

This is a Future Technology DVD-ROM This disc has been thoroughly scanned and tested at all stages of production, but – as with all new software – we still recommend you run a virus checker before use. We also recommend that you have an up-to-date backup of your hard drive at all times. Unfortunately, Future Publishing Ltd cannot accept responsibility for any disruption, damage and/or loss to your data or computer system that may occur while using this DVD, the programs and data on it. Consult your network administrator before installing any software on a networked PC (or Linux box).

Defective discs In the unlikely event of your disc being defective please email our support team (**support@futurenet.co.uk**) for assistance. If you would prefer to talk to a member of our reader support team please call +44 (0)1225 822743.
Software problems If you have a query about using your disc's interface or content, please visit our reader support website located at **www.futurenet.co.uk/support**, where you can find solutions to many common problems. If you are still experiencing difficulties, you can email our reader support team at **support@futurenet.co.uk** for further assistance. If you do not have internet access please call +44 (0)1225 442244 between 9:30 am and 5:30 pm UK time, Monday to Friday. Please note that we can only provide basic advice on using the interface and installing software from the disc. Unfortunately we can't give in-depth help on the applications, or on your hardware or operating system.
We are unable to support beta software.

Software-packed **dual-booting** DVD!

4GB

ubuntu 8.04

The distro you've all been waiting for! Hardy Heron LTS: exclusive Linux Format edition

» Includes Gnome, KDE and Xfce
» Live distro: try without installing
» 64-bit and Server ISO images

LXF DVD107 July 2008

Also on this DVD: Mandriva One 2008 Spring

Plus much more – see index.html for full software descriptions

Software-packed **dual-booting** DVD!

4GB

ubuntu 8.04

The distro you've all been waiting for! Hardy Heron LTS: exclusive Linux Format edition

- Includes Gnome, KDE and Xfce
- Live distro: try without installing
- 64-bit and Server ISO images

LXFDVD107 July 2008

Also on this DVD: Mandriva One 2008 Spring

Plus much more – see index.html for full software descriptions

ubuntu 8.04

MANDRIVA

LINUX FORMAT The #1 source for Linux

DVD107

4GB software-packed DVD

WARNING: Before you even put the DVD in your drive, please make sure you read, understand and agree to the terms and conditions on page 69 in the magazine.

Issue 107 July 2008

LXF107D/07/08 Made in the EU

Future MEDIA WITH PASSION

DVD ROM

DVD ROM

LXF107D/07/08

Future
MEDIA WITH PASSION

ANY COMMENTS?

Send your thoughts and coverdisc suggestions to **mike.saunders@futurenet.co.uk** with "Disc Contents Suggestion" as the subject line of the email, or by post to:

Disc Editor, Linux Format, Future Publishing, 30 Monmouth Street, Bath BA1 2BW

● Please read the DVD pages in the magazine before using this disc.

recycle

Respect the Environment

Throwing away old or surplus discs?

If you would like your CDs and DVDs to be recycled rather than put into landfill, please post them to:
Polymer-Reprocessors,
Reeds Lane, Moreton, Wirral, CH46 1DW

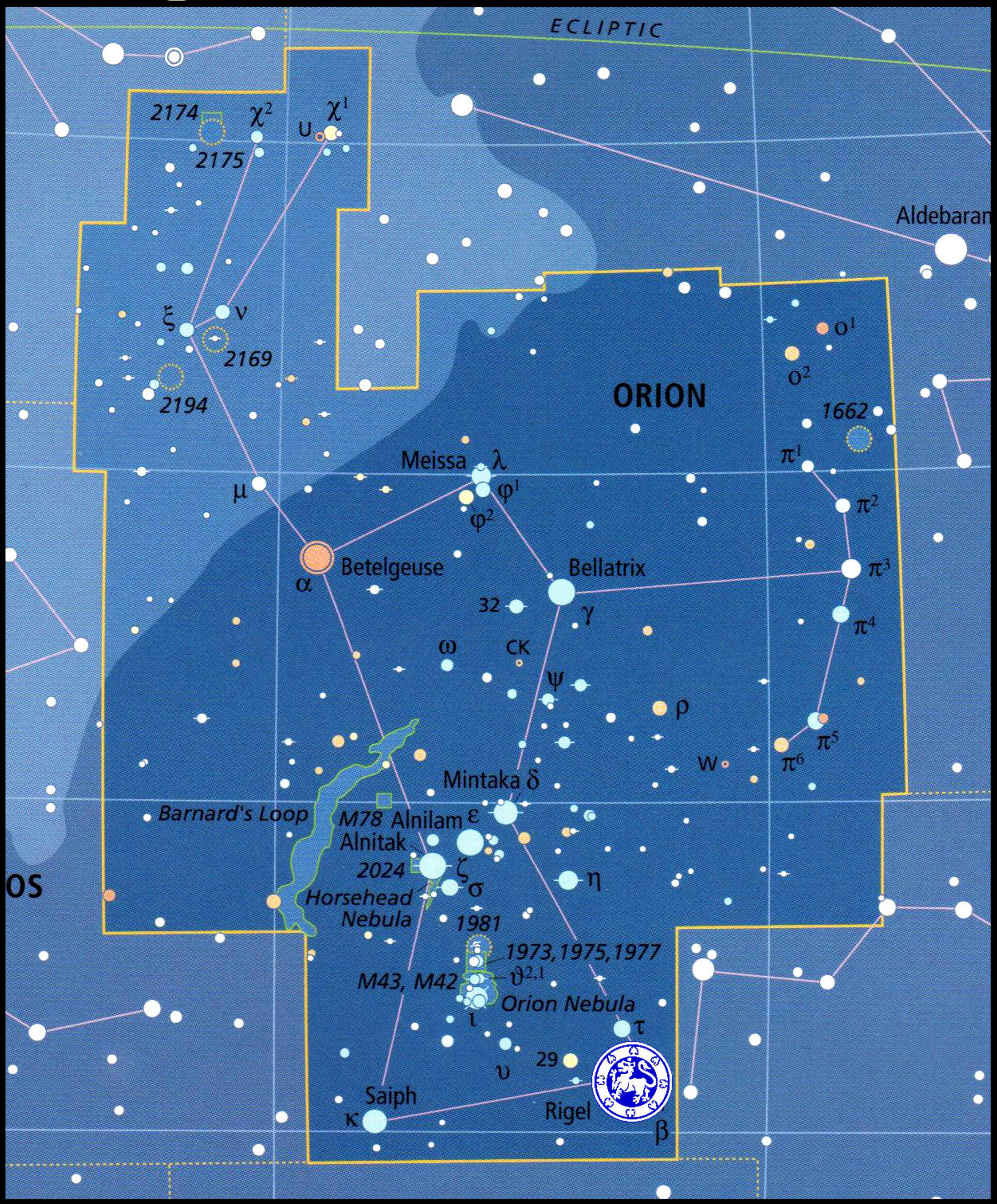
Please respect the environment and dispose of waste plastic responsibly.

This is a Future Technology DVD-ROM This disc has been thoroughly scanned and tested at all stages of production, but – as with all new software – we still recommend you run a virus checker before use. We also recommend that you have an up-to-date backup of your hard drive at all times. Unfortunately, Future Publishing Ltd cannot accept responsibility for any disruption, damage and/or loss to your data or computer system that may occur while using this DVD, the programs and data on it. Consult your network administrator before installing any software on a networked PC (or Linux box).

Defective discs In the unlikely event of your disc being defective please email our support team (**support@futurenet.co.uk**) for assistance. If you would prefer to talk to a member of our reader support team please call +44 (0)1225 822743.

Software problems If you have a query about using your disc's interface or content, please visit our reader support website located at **www.futurenet.co.uk/support**, where you can find solutions to many common problems. If you are still experiencing difficulties, you can email our reader support team at **support@futurenet.co.uk** for further assistance. If you do not have internet access please call +44 (0)1225 442244 between 9:30 am and 5:30 pm UK time, Monday to Friday. Please note that we can only provide basic advice on using the interface and installing software from the disc. Unfortunately we can't give in-depth help on the applications, or on your hardware or operating system.
We are unable to support beta software.

Rigel



starhome